

CASE STUDY: University Superlabs / Australia

Background

A Superlab is a flexible wet-lab that allows multiple practical science classes to be taught simultaneously in the same space. It provides an alternative to several smaller, disconnected labs across multiple campuses with considerably worse technology that are being used infrequently.

Teaching laboratories are expensive to build, staff and operate. Often each university discipline, such as chemistry, biology, physics, medicine and more will have their own dedicated labs even though they may be in use for teaching only a few times a week. The Superlab concept typically allows more intensive and efficient use of space with both large first-year classes and smaller specialized courses able to share the same physical space. The potential savings are considerable, with one new Superlab replacing several stand-alone labs and consolidating staffing requirements.

Implementation

At the moment, seven universities are using Panphonics directional speakers as a part of their Superlab designs. Due to their ability to create focused audio zones and produce clear, natural sound, the speakers are seen as a good fit for the concept.

As system integrator, Programmed Electrical Technologies (PET), supplied and installed the AV and network infrastructure into the LEES Building 1 for The University of Sydney. Project Manager, Mark Connerton, describes what makes Panphonics special from a PET perspective:

“We’ve been very impressed with the Panphonics Sound Shower directional speakers. Audio reinforcement through these speakers allows students to listen to an instructor with minimal spill into an adjoining class.”

The University's AV Design Manager and design lead for the LEES spaces, Nathan Ashmore, was equally pleased with the speakers' ability for lifting the voice while ensuring minimum interference to other cohorts sharing the room:

"We needed an electro-acoustic solution, which was certainly challenging. We did some testing of the Panphonics solution and found what we could achieve in the voice frequencies was far superior to all the other proposed solutions. Due to our initial success we've not seen any reason to change our approach for these Superlabs."



In an earlier Superlab report written for AV technology, Derek Powell described his experience with Panphonics directional speakers in The University of Sydney's AVIA award-winning X-Lab:

"I was given a demonstration by Paul Menon, University of Sydney's technical manager Audio Visual Services, and was absolutely staggered by the effectiveness of the system. Standing at one bench, I could clearly hear the instructor speaking yet when I moved just a couple of steps and stood under a Sound Shower enclosure at the adjacent bench, I found myself listening to another instructor, with very little crosstalk. Being an electrostatic design does limit the low frequencies somewhat; however, I found speech reproduction to be clear, crisp and easily distinguished."

This lab was designed to cater for up to eight classes at once, with each group ranging in size from eight up to 240 students in any combination. By implementing Panphonics directional speakers, X-lab solved the problem of managing and sanitizing hundreds of headphones in a laboratory setting.

Additionally, tutors used wireless headsets so they could hear themselves clearly. The receivers transported audio via Dante networking, providing a simple mechanism to route any tutor to any required combination of benches to cater for different size classes. The wider audio system utilized Dante to distribute audio between the nine Symmetrix Radius Series DSPs, 16 channels of microphones and 45 loudspeaker zones.

Further university cases include The University of Melbourne, James Cook University and UNSW Australia.

Sources:

<https://av.technology/case-studies/lab-report>

<https://av.technology/projects/lab-wrap>