



## Technology design for higher education: Protecting facilities from obsolescence

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Shen Milsom & Wilke is seeing greater demand placed on technology infrastructure across a wide spectrum of educational facilities, from performing arts centers to film schools, research labs to medical simulation environments. This is created in part by new learning methods which are driven by technology, as well as by the ever-increasing capabilities of consumer electronics, which leads to greater expectations from students, faculty, and staff. Our challenge is to design a technology infrastructure that protects the institution from obsolescence. Volatile changes in mass-produced electronics such as displays and cameras cannot be allowed to invalidate the decisions of architectural space-planning. For example, the massive increase in mobile device usage and resulting demand for wireless networking has great influence over telecom room sizing, data center outfitting, and cable pathways. It is fascinating to consider that pocket devices can have such influence over the brick-and-mortar design of a facility.

These unique circumstances demand unconventional solutions. When asked to interpret the needs of users and stakeholders, we enjoy bringing our broad project experience to the table. We continue to be surprised by the myriad ways in which experience gained on one project can feed into another, despite each being wildly different. We're seeing this now during the programming of an open-plan educational space for Teachers College, where we have discovered that our work in museum and concert hall technology design applies directly to our work in educational technology.

Teachers College's Gottesman Library "Learning Theater" at Russell Hall will be an open-plan educational lab devoted to experimentation with unconventional collaboration and instructional methods. Once complete, the facility will allow its staff to construct small to medium size spaces with portable materials in a manner similar to theatrical scenery or temporary exhibition partitions. Each partition may be outfitted with high resolution displays, dedicated sound, and data network connectivity to support video recording and distance learning. Faculty and other experimenters in the Learning Theater can use the space to explore new methods of their craft. In this context, students and onlookers are considered the "audience," and the varying degree of control applied to each constructed space is gauged by its production value.

When called upon to design audiovisual support infrastructure, network connectivity, and acoustics for a space like the Learning Theater, we use our experience in performing arts and museum design, referring our clients to lessons learned on prior projects in which the very same requirements were met, bringing value from unexpected places. Our experience designing open-plan museum gallery infrastructure, influences our planning of technical grid ceilings and overhead cabling infrastructure for the Learning Theater. So too does our experience designing backstage support facilities and open-plan performance spaces for Carnegie Hall, where a similar balance is being struck between education and the audience experience.

Carnegie Hall's Studio Towers Renovation has just opened its Resnick Education Wing, part of the renovation of its backstage, administrative, and artist support spaces. The project schedule had to be closely coordinated with Carnegie Hall's concert season, causing SM&W to design temporary sound systems to extend music and paging functions in the backstage areas. This allowed Carnegie Hall's stagehand staff to continue their concert support work uninterrupted during demolition of surrounding areas. The Weill Music Room requires ample flexibility in its technology, yet must retain ease of use for non-stagehand users. Permanently installed projection screen and loudspeakers retract from the ceiling, linking to a theatrical grid for additional sound and video devices to be rigged as required.

Although Carnegie's Weill Music Room and the Russell Hall Learning Theater may share solutions in an open plan, technical ceiling grid, there is an important difference: The Learning Theater must support multiple, simultaneous yet unrelated events at a time! The acoustical implications of this are nontrivial. It is here that the Learning Theater's similarity to the Weill Music Room ends, and we find instead that our museum technology design experience becomes relevant.

At the Singapore Discovery Center, an "edutainment" center that seeks to teach the history and culture of Singapore, SM&W programmed multiple, AV-intensive exhibits across an open plan floor to minimize sound spill between exhibits. This was accomplished with careful attention to acoustical absorption, specification of loudspeaker systems which focus sound on their respective listeners, and control of exhibit locations. As in many cases, the ultimate solution lies in advisement and training of the end users, who will be responsible to rig the audio systems.

The necessity of appropriate, smart technology infrastructure has never been more evident in education. The increasing demands placed on these facilities by the advancing capabilities of consumer electronics, and the expectations of their users as a result, demand unconventional solutions at times. This affects classrooms, lecture halls, performing arts stages, medical simulation, and visual arts facilities.

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