



ABCs of Smart Classrooms

By Cathy Murphy

There has been a lot of buzz about smart classroom technology, from claims that it will eliminate all technical problems related to the classroom interface to charges that it is merely packaging. So it is useful to take a few steps back and ask some basic questions about this trend: What exactly makes a classroom smart? Or smart enough? What are some of the tricks to taking an empty room and turning it into a rich learning environment? What about renovating existing classrooms into smart ones?

Since it seems that every campus is in the midst of a smart revolution, we've asked some campus experts for their tips on how best to accomplish the transformation.

Don't put the (AV) cart before the horse. Make sure faculty buy into the new technology and receive some training in advance. No one wants to be told that they have to revise a lecture presentation (from chalk to Web) overnight. Says Charles Johnstone, the AV specialist at the National Technical Institute for the Deaf at Rochester Institute of Technology, "We started with a parallel course of renovating a small number of classrooms [while initiating] an intensive training effort for faculty on how to migrate their conventional delivery methods to the most up-to-date uses of technology. Participation [in the workshops] was voluntary but over 85 percent of our faculty jumped in over a period of two years."

Johnstone hints that a relevant incentive may boost instructor interest. "As a 'graduation gift,' each workshop participant was given their choice of a new Mac or PC laptop which can be interfaced with the technology designed into the smart spaces."

Be flexible. At a small college, for instance, it may not be necessary to order a suite of identically configured smart rooms. Don't shoehorn the latest technology into a situation that doesn't warrant it. "At Oberlin, there's a real sense of individuality and diversity," says Gary Kornblith, historian of the Industrial Revolution and former director of the college's OCTET (Oberlin Center for Technologically Enhanced Learning). "Faculty don't want to be told how to teach. We felt it was important to offer a choice of environments, various approaches to teaching with technology."

Keep it simple. Buy the technology you need and don't over-engineer the smart room. Kornblith notes that the Oberlin electronic seminar room was simple, and therefore very easy to manage. "The wireless technology didn't let us down," he says. "We never had to fall back on our stash of cables. And [taking basic precautions] we never had any theft."

On the other hand, a larger college or university may find it best to go with a large-scale uniform approach to smart classrooms. Wake Forest University, for instance, requires its students to have laptop computers, and has outfitted 98 percent of its 140 classrooms with identical AMX touch panel controls and a laundry list of hardware and software offerings.

Some schools are going with a tiered approach that allows them to create a few designated types of rooms rather than dozens of different configurations. Fordham University has three levels of smart classrooms: general purpose, multi-purpose, and high-end. Level Three classrooms are used for multimedia lectures

and presentations. These classrooms include all of the A/V equipment available in Level One and Two classrooms, plus a state-of-the-art sound system and fixed seating equipped with electrical and data outlets. At each seat, students can plug in a notebook PC for intranet and Internet access. Level Three classrooms also feature sound amplification and video conferencing capabilities.

The University of Wisconsin Milwaukee likewise has a multi-tiered approach, from the basic classroom that includes only an overhead projector and screen to a full-service distance learning room featuring video and audio conferencing and cameras. The trick is knowing the likely function of each room before designing a technology plan.

Design the smart classroom for the people who will teach and learn in it. The University of Wisconsin Milwaukee's Classroom Support Manager Jon Polek says it's critical that both instructors and instructional technologists be involved in planning the smart classroom. "In some cases at a state university, the state bids out the contract to an AV consultant, who makes all of the decisions," says Polek. That group may or may not know much about basic teaching and learning issues. "It's really important that faculty be consulted about such things as the technology to be used and the configuration of the room. Otherwise, you may have instructors coming to you after everything's in place to tell you it's not comfortable to use." A professor may find himself standing in one spot at a podium and trying to project images to a screen he can't even see, for instance.

Also, think about such mundane issues as set up and close down time. Says RIT's Johnstone, "Because most classes at RIT last only 50 minutes and then have only a 10-minute class changing period, transition from user-to-user must be quick, easy, and reliable."

To provide an open-ended opportunity to teach with technology, Oberlin designed an electronically enhanced seminar room, in which instructors and students use wireless iBooks to integrate technology into a discussion-based teaching environment any way they see fit. Anne Trubek, assistant professor of English at Oberlin, says that in her course, "Technologies of Writing from Plato to the Digital Age," students welcomed the opportunity to do collaborative writing via the computer. "They feel empowered by the technology. They are the experts."

Provide support. Make sure there are enough AV or IT specialists on staff to manage the equipment. The more complex and support intensive the technology, the more people you will need. In a large auditorium, it makes sense to install a control room with remote management capabilities. And be available. UWM's Classroom Support staff is available for planning, implementation, and support for daily use of the campus's smart classrooms.

Says RIT's Johnstone, "We established a dedicated, full-time group of first-response 'troubleshooters' who can respond to a problem of any nature in any of the smart classrooms, labs, and conference rooms. The response time must be rapid—under 1 minute. We have found that most problems can be resolved in under 5 minutes or a temporary back-up can be put in place so the delivery of instruction goes on with only minor interruption."

Make sure that instructors get the help they need learning to use the technology. Johnstone adds, "We opened an 'Educational Technology Resources Room,' a combination lab, library, and meeting area where faculty and staff can go to seek assistance developing materials for their courses."

Keep current. Regularly review the quality, currency, and usefulness of the smart room's tools. Set up an assessment system to determine what is working and what isn't. Determine your comfort level with really new technology. Kornblith notes that Oberlin "wanted to be ahead of the pack but not on the bleeding edge."

Putting the Smart Into Building Smart Classrooms

One of the fundamental considerations when setting up a smart classroom is the clientele. Who will use the room? Will it be a production studio for distance learning, in which there are few, or no students on site, or a sage-on-the-stage auditorium? What do you do when space and financial limitations mandate that the room serve many purposes?

Virginia Commonwealth University has done it all, it seems, and successfully, by keeping its many audiences in mind. Recently, the school renovated a historically significant antebellum space, the Baruch Auditorium, integrating the latest technology into the beautiful old building. They've also completed a cutting edge classroom that is outfitted to serve as a distance learning forum, production studio, and on site classroom. Each project presented its own challenges.

Baruch Auditorium, in VCU's Egyptian Building, was built in the 1800s and had not been renovated since the 1930s. Beautiful and richly detailed in an Egyptian motif, Baruch posed a special challenge for the group working on the smart classroom plan. "We had to work around some limitations," says David Van Nest, director of Media Support Services (MSS) at VCU. "For instance, since we had to retain the architectural details, we couldn't drop the ceiling. We also were working with some less-than-ideal sight lines and acoustic challenges."

MSS decided to build in a surround-sound system that would resolve acoustic gaps. They were able to replace the room's furniture, and so made the best of the room's configuration. They installed a Crestron remote control system that controls all of the equipment and lighting in the hall, from either the central podium or the projection room.

That took care of lecture hall needs. But VCU is also ramping up its distance education mission. According to Sonja Moore, director of Distance Education, VCU's program is 200 students strong and growing. VCU began with a few degree programs and is building the course offerings with a plan to reach out to both in-state and out-of-state students. As a result, MSS is being told to prepare smart classrooms to be used in the future for distance education. With that in mind the MSS staff made further renovations to Baruch Auditorium, including monitors to display remote sites back to Baruch Hall, and cameras that will allow them to project on-site images out to the distant students.

VCU is also building new smart classrooms that will serve several masters. The Cabell Multimedia Classroom was designed to be used three ways: for distance education, run by a technician with students present; as a basic classroom; and as a production studio. Starting with a new building was easier than renovating a 19th century hall and allowed them to create a model smart classroom. First, they identified the room's primary use: as a distance learning studio. The room has full video conferencing capability, including robotic cameras, plasma screens on pivoting wall mounts for on-site display, push-to-talk microphones, wall-mounted plasma monitors that allow the instructor to view local and remote site students, computer with Web connection, and a document camera. They thought of everything. Says David Van Nest, "We took into account such issues as background sounds—air hiss and such—that would be picked up by microphones."

In order to maximize use of the room, it is also available for smart classroom use when it's not in use for distance learning. In this scenario, instructors can operate the room's equipment without the aid of a technician. There is a ceiling-mounted video/data projector, VCR, motorized projection screen, and Crestron touch-panel control for all devices, including lighting and audio.

When vacant, the room also serves as a production studio. All furniture is removable. In addition to the equipment described above, there are professional level production tools, including remote controlled cameras, an AMP Powerfloor, and acoustically treated walls. The room is tied into a complete video production room.

Says David Morefield, Multimedia Producer/Director, "There are different concerns when you're creating a smart classroom for on-site use and a distance education space." These issues affect not only what you purchase for the room, but also how you configure it. "For instance," he adds, "We had to make sure that the sight lines would work for either type of use. In one case, instructors are teaching for television. In another, they're teaching students sitting right in front of them. In one case, a person in the control room will determine who sees what on the screen. In the other, it's all up to the instructor."

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This article originally appeared in the [9/1/2002](#) Issue of Syllabus
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