Educause 2000
Current Issues Roundtable
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Electronic Classrooms and Buildings of the Future

Introductory Comments

There are three areas we might want to discuss as we consider the planning, development, and support of technology facilities: Demand for increased installation of technology resources, concerns that follow from these demands, and installation trends.

Demand Factors
° There is a renewed interest in faculty development, with an emphasis on the incorporation of technology in the teaching process. Of course, this push will lead to an expectation of ready access to display technology in the classroom
° In addition, 25-50 technology savvy faculty join our institutions each year. Instructional Technology was part of their curriculum as they passed through college and graduate school. They know how to use technology, they want to use technology, and they expect to see support infrastructure in place (and they most certainly do not like pushing AV carts).
° Web tools for course management and content authoring are becoming easier to use, more powerful, and they are extremely well marketed!
° Presidents, Provosts and Deans are all advocating innovation, academic excellence, competitiveness, etc. In some cases, faculty are being told they WILL innovate. This adds significant pressure for ubiquitous classroom technology resources.
° Computer literate and web-ready, today’s students have increasing expectations for more visual and engaging lectures and learning environments.

Demand Problems
° Generally, 25% of classrooms are technology equipped. This leads to a possible:
° disconnect between policy directives from university leadership (more) and the financial resources dedicated to technology infrastructure (not more)
° One-time, continuing, and life cycle resources are not adequate. We are not trying to put $150 overhead projectors in each classroom anymore
° There is limited recognition of the demands these resources place on maintenance budgets and staff. Rooms are easier to add than support staff.
° Faculty who use technology in the classroom have a significant stake in the reliability of these systems. If it doesn’t work, they cannot teach. (Our biggest problem used to be no chalk in the classroom).
° In addition, faculty and students have high expectations for technology performance, they want only the highest quality!
° Scheduling of technology rooms is critical: we must maximize the effective use of these expensive technology resources. BUT:
° As we try to get the most our of our investment in technology rooms by maximizing occupancy, we run the risk of loosing access for testing, repairs and preventative maintenance
° Success is also a problem! Faculty who adopt technology in their teaching expect to have continued access to these resources. An instructor teaching in a dual projector room with a document camera is frustrated when these resources are not available for a different course in a different room. As we improve our technology installations, we may be fighting continually rising expectations.
° We must also remember not to neglect the ‘pre-technology’ classroom basics: adequate lighting and climate controls, attractive wall and floor treatments, comfortable seating,
acoustic isolation from traffic, hallway and other noise sources, adequate board space, (and chalk).

**Trends**
- There is increasing faculty and student demand for powerful, technology-rich teaching environments, including:
  - Multiple projection systems
  - Simple and intuitive control systems (rather than training)
  - Flexible and abundant inputs to the system: VCR, CD, DVD, Doc cam, Smart-type board, fixed PCs, and laptop inputs
  - Wireless controls to free faculty from the instructor station.
  - Direct interaction with the projected image through SMART-type systems.
- Increased connectivity to the classrooms with higher bandwidth (I2) will facilitate access to real-time, high quality audio and video, make remote instrumentation possible, and will lead to classrooms without walls: anyone, from anywhere, can participate in the teaching/learning process.
- Class size is changing with both bigger AND smaller classes as instructional models shift. We have tended to neglect the development of technology resources in our smaller rooms, concentrating on large rooms where we get more ‘bang’ for the buck.
- There will be pressure (we hope) towards evaluation of technology usage, in terms of utilization of technology resources and their effectiveness in the instructional process.
- A trend towards learner-centered rather than instructor-centered classroom teaching and towards collaborative rather than individual learning. Both of these trends will have an impact on the types of facilities that we are required to design and support:
  - Flexibility in seating, as students move from lecture to discussion, to small group collaboration and back again during the course of a single class meeting
  - Wireless connectivity for student laptops (based, of course, on enhanced battery power or battery exchanges for student systems.
- This trend also leads to a need for different types of learning spaces including:
  - Presentation practice rooms
  - Rooms with teleconferencing resources for collaborative e-meetings
  - Access to resources in common areas including the evolution of a learning community that requires 24 hour access to technology resources, including support staff, and even a ‘cyber café’
  - Faculty access to professional media development assistance and production resources
- A move towards more interactive teaching models. Even in large classes, technology offers faculty opportunities to engage the class (live polling, for example a la “Who wants to be a Millionaire”, or the ability to give students the ‘floor’ during a class in a PC lab using software solutions).
- Collaborative consortia, virtual departments, and other aspects of on-line and distance learning will have an impact on technology infrastructure and class size.
- There will be bottom-up AND top-down pressure to use (and recognize the users of) technology enriched instruction. Students and academic administrators will expect faculty to seek out the best practices for enhanced instruction. Promotion and tenure models will have to be adjusted to reflect this emphasis on instructional innovation. Instructional technology tools will become part of the instructional base, and faculty will be expected to learn and use these resources.
- It is hoped that this transition will not be too hard. Instructional Technology is ‘addictive’, that is use of a simple CI class page, where faculty are ‘required’ to post their syllabus and assignments, almost inevitably leads to use of threaded news readers, chat rooms, on-line
assignments, and technology enhanced presentations. Further, once addicted, an innovative faculty member tends to become a technology pusher: “it was great, try it you’ll like it”.

**Some Questions for Consideration:**

- How can we meet rising demands and expectations for instructional technology (financially and in terms of support)?
- Just what are these demands, anyway? Do we REALLY know what our faculty want and need? What steps are we taking towards assessment and evaluation of our technology resources?
- How do our students learn best? We have been teaching a specific way for hundreds of years. We wouldn’t do this if it didn’t work. What is all the fuss about?
- If you are making a major thrust towards new fixed installations, what will you do in 5 years when it all breaks?
- Are we maximizing effective use of expensive technology resources through aggressive matching of faculty with resources? Is our technology room occupancy rate sufficiently high?
- What should we put in our rooms? Will basic technology rooms (already difficult to fund and support) become unsatisfactory to an increasing cadre of IT savvy instructors with technology rich syllabi? How do we define ‘highest’ quality. How much should we spend on resolution, bandwidth, input device flexibility?
- What is the life cycle of these rooms? Is the life cycle determined by equipment life or by changing instructional parameters?
- What about distant teaching? Are students, faculty or lecturers always going to be on campus? Should teleconferencing resources be part of more classroom designs?
- How do we balance the need to maximize utilization with the need for access to facilities for inspection and maintenance?
- How do we assess our facilities? Are faculty using these resources? How do our students want to learn? Are we meeting their needs? Do students learn better in a rich visual environment?
- Are our classes getting bigger? Smaller? Both? How will this influence new classroom construction? Are we building out or in?

**Comments Collected from the Discussion**

- Classroom inventories aid in strategic planning, also, these inventories should lead to the development of descriptions of classroom 'types'. These clear and simple descriptions assist the registrar in matching faculty to facility and also can serve as starting points for specifications of requirements for new facility planning.
- Faculty input is important to the process of design
- There is an ongoing need for support and training and documentation
- Some faculty prefer to use laptops in the classroom, others prefer a fixed PC. There was no consensus.
- Technology room standards (technology features, equipment specification, room layout, suggested service provider, etc.) should be developed for the institution. Standardized rooms are easier to maintain, easier on the registrar, and easier for faculty to become comfortable with.
- These room standards should be made available to departments developing ‘private’ technology facilities. Somehow, these rooms always come back to haunt centralized service groups, and the closer they are to the standard, the fewer the problems later on.
While there was agreement that we tend to be more aggressive with installation of technology in larger rooms, some folks have installed some smaller rooms. Small room features include:

- Tables on wheels or
- Furniture Pods
- Raised floors with ac and LAN jacks or
- Wireless LAN support
- Smart Boards
- Built in projection systems or
- Roll-in projection systems
- Roll-in laptops
- Bean-bag chairs

Overall, current design trend appears to be towards support for laptops at student seats (wired or wireless), flexible seating, multi-function facilities.

Hotlines to support staff for help with technology rooms are recommended.

To determine optimal room setup (furniture), look at how the furniture tends to be left after classes. Use this for the ‘default’ setup in flexible classrooms.

When designing facilities, be sure instructional technology staff has input before space layout is completed (for example, seminar rooms don’t work well if there is one group of students encircling a table, and a second group behind them). Architects seem to lack sensitivity to functional IT requirements.

As there was significant interest in this topic, other professional organizations and conference venues for the exploration of classroom technology and facility design issues were suggested: CCUMC (http://www.indiana.edu/~ccumc/), the Society for College and University Planning (http://www.scup.org) and ICIA/INFOCOM (http://www.icia.org/). It was noted that ICIA offers a certification program in facility design and installation.

Personnel are not as easy to add as classrooms.

High bandwidth connectivity should be part of the base set of resources for new classrooms and lecture halls. Two-way, high quality, video in the classroom may become more common.

Flat-screen (plasma) displays are seen as too small for classroom use. At this time, most would prefer a projector installation, even in small classrooms.

A wireless mouse should be a basic feature in a technology classroom.

Attendees expressed interest in additional discussions of this sort at future Educause conferences. It was also felt that there was a need for more representation in the conference program for discussions of facilities design and costs and IT delivery to the classroom issues. There was some interest in continuing the discussion on-line or even the development of a web site to house strategic, tactical, operational, and facility plans.