Getting blood from a stone

Squeezing an inexpensive lab/electronic classroom into a medium-sized academic library

by Dorothy A. Warner, John Buschman, and Robert J. Lackie

In December of 1998, Moore Library at Rider University (RU) finished what turned out to be a project six years in the making—a lab/electronic classroom. Our experience is instructive because, through the tortuous process of seeing this proposal to fruition, we have learned a number of things along the way: what is less important and what is still important in planning and implementing such a project.

Second, RU's project is most decidedly not like those at large, research-size academic libraries—like University of California–Santa Barbara, University of Iowa, or George Washington University[1]—where under- or unutilized space was identified in a very large building, architects and designers were called in, and ambiance as well as functionality were major concerns.

RU is a medium-sized university and library (about 5,000 students and 375,000 volumes), and as a 1998 study of our library building noted, Moore Library has been identified as having a space problem since 1990. Usable shelving capacity is nearing its limit, and supplementary areas like reference, microforms, periodicals, and video shelving are at capacity. Their expansion will eat into the already shrinking seating and general stacks areas.

One 1997 article noted that 90% of the educational space to be used with technology has already been built[2] and Rider Library is no exception. The area for the lab/electronic classroom at Moore Library was carved out of already heavily used space. We squeezed services and collections into alternate spaces, modifying as little as possible the existing structure with in-house labor, and worked out all of the design issues between the library, Facilities, and Office of Information Technologies (OIT) personnel.

In other words, our experience is likely to be typical of a large number of academic libraries like RU's, who wish to create such a space and offer the services of a lab/electronic classrom conveniently located in their library. Since we found so little in the literature that addressed the specific concerns we faced (i.e., cost and space problems of an already small building), and had to adapt everything we read to our situation, we decided to pass along what we learned from this project.

Chronology of the proposal process

We are not strangers to the political realities of bringing a lab/electronic classroom to completion. From the fall of 1992, when discussion of expanded electronic access began, to the completion of the lab/electronic classroom in December 1998, RU Libraries experienced several changes that significantly affected the final product.

Negotiations with the old and new library administrations and administrations of OIT required several proposals over a four-year pe-

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riod. Proposals were made for a classroom with as few as 6 and as many as 30 computers and an offer from OIT for 14 of the best available used computers to get a lab/classroom built even more cheaply. During the discussions over the used computers, it was tactically agreed that the facility would be a general-use lab when not in use (exclusively) by the library for its Library Instruction Program.

Construction considerations initially included constructing glass walls, or perhaps sliding walls, to enclose a new lab/electronic classroom within the reference room. The more financially realistic consideration of removing a non-load-bearing wall to expand an existing space was the result.

Delays occurred as a result of financial snags beyond construction costs. For example, there was a one-year delay when the financing for computer furniture could not be determined.

Not to be underemphasized was the willingness of the library administration to compromise, be persistent, creative, politically astute, and keep the lab/electronic classroom in the forefront of discussions with OIT.

Regular communication with the librarians proposing the lab led to a final design that was agreed to easily. Design considerations within the rather constrained designated space were thought through carefully, both from a teaching and learning standpoint and from a practical standpoint of maximizing the use of the space.

By now, the lab/classroom had three basic functions, which the final design had to accommodate 1) a general-use lab when not in library instruction use; 2) an electronic classroom for library instruction; 3) a second facility for traditional library instruction sessions.

How it was built

One library administrator was the key point person, and from the beginning of the construction the librarians on the lab/electronic classroom committee took a back seat so as not to interfere with the communication process. The library administrator consulted with the committee regularly, kept the communication channels clear, and essentially acted as a general contractor for the work done in-house by Facilities, OIT, and contracted outside vendors.

The Director and Associate Director of Facilities offered hard-learned advice based on prior experience of building labs on our campus. The lab construction process was thought through and communicated carefully by the library administration to Facilities managers, who sent electricians, carpenters, painters, etc. as they became available. RU's good fortune of having a highly skilled, thoughtful Facilities Staff became the library's good fortune.

Facilities managers found and adapted designs purchased from Nova Systems to custom-build to our specifications (i.e., as small as possible) the desks that house recessed computers. The library purchased the chairs, instructor's desk, and recessed-computer holding kits from our photocopy vendor (who also sells office furniture). He made a donation and allowed for some creative financing.

Floor plans of the Moore Library Lab/Training Center

Along the way, recommendations by the Facilities Staff were made for desk design improvements, inexpensive soundproofing, inexpensive air-handling improvements, lighting

Lackie teaching in the new lab/electronic classroom.

improvements, carpeting and paint color suggestions, and wiring improvements. The Media Services division of OIT put together room design choices based on several suggested layouts, and they made recommendations for the presentation equipment and its installation. The overriding emphasis in the design of the room was that it accommodate as many computers as possible, provide a workable teaching space, and be effective in all three of its purposes—all in an odd, asymmetrical space.

The facility is next to our Information Desk in the reference area of our library in a space expanded by removing a wall to create one room from two adjacent rooms, one with the dimensions of 15' x 11¼" and the other 11' x 18'1".

Builders began working on the lab/electronic classroom in late October 1998, and it was unveiled on Christmas Eve 1998—four months "early." It serves as a general-use lab when library instruction sessions are not taking place, and most of our instruction sessions (averaging 222 sessions a year) are now done in the lab/electronic classroom.

Student assistants staff the room when it is in use as a lab, and they help with the instruction sessions when needed. The lab/electronic classroom seats 22 students at 11 computers. The 12th computer is in the front of the lab, serving as an instructor's station, which is mobile to allow for different teaching styles. Projection equipment provides the instructor with the capability of making large-screen presentations.

All computers have access to the Internet via Netscape; to our libraries' homepage, which provides electronic access to 17 databases; to an additional six databases, available via a CD-ROM local area network; to the standard Microsoft package (spreadsheet and graphics software, word processing, etc.); and to e-mail. In the end, a setup with no extra bells and whistles—like built-in AV capabilities—was chosen because of space consideration, and we did not want further functions for a small room already filling three needs.

Lessons for smaller academic libraries

Fortunately for all of us, technology is constantly evolving and has solved some vexing hardware and software problems.

CD-ROM drive "clips" allowed us to use tabletop computers and mount them on their sides under the desks with CD's and floppy disk drives operating normally. In a room where space was at a premium, the three more inches of width with the tower version of a PC processor would have made a significant difference of about one foot of legroom in an aisle of four computers.

Mounting the computer equipment under the desks is also standard now, and it gave us the option of two students easily sitting at one computer with plenty of room to take notes. This works very well for instruction sessions when the classes can be fairly large.

Incidentally, we used the older 15" monitors instead of newer 17" monitors because of space, as well. A 17" monitor would have required more desk width, reducing the space for the instructor in the front of the room by almost a foot.

Before the construction and use of our lab/electronic classrom, the librarians involved in the planning made onsite visits to other facilities on other campuses and taught instruction sessions in labs at RU.

They researched electronic classroom design through an extensive literature search, attended several workshops on electronic classroom design, and served as a resource for others developing labs/electronic classrooms, such as our English Department.

They observed that students were often paying attention to the equipment rather than the instructors. When two of the authors used a lab/electronic classroom on campus with an alternative arrangement (i.e., computers in clusters facing different directions in the room) to teach, this problem was formidable.

Everyone involved agreed that this arrangement would not work for the library's facility.

RU's English Department already tackled that problem when they designed their electronic classroom for writing courses.

However, the auditorium design (i.e., concentric rows of semicircles) they chose left no easily accessible aisles to circulate among students and put the instructor directly in the glare of the projector, blocking the view of some of the students. In the end, we came up with a list of what is still necessary in a bare bones project such as ours:

• **Line of sight** (instructor to learner and vice-versa). Computer labs can be built and designed so that people do their work with little contact with what is going on around them. Electronic classrooms and combination lab/electronic classrooms have the added element of accommodating instructor presentations.

For example, demonstrating a search method or a database, followed by hands-on practice—a common method used in electronic classrooms—would require seeing the demonstration clearly and easily and monitoring students' follow-up work.

Line of sight is critical for this method to work, so the computer workstations need to be arranged accordingly. We chose a very traditional design: all desks facing the front in three rows (two with four computers, one with three computers) and an aisle by the instructor's station for easy access to each row.

With the instructor's station placed to one side of the screen, there is no interference with the projected image. It has turned out that this design, combined with a rather long, narrow room, has kept students focused on the instructor and the work at hand. Perhaps that is why the traditional classroom layout has been around so long.

• **Lighting.** Rider's Facilities department routinely installs parabolic florescent lighting. This is a much more directed form of lighting that reduces strain on the eyes. Further, individual banks of bulbs within each row of lights can be switched separately (i.e., they can operate with one, two, or all three florescent bulbs on), and the bank of lights nearest the projection screen is easily wired to its own switch. (The switches were placed near the instructor's station.)

While these adaptations were essential, it is *much* less expensive than elaborate dimming systems. It was suggested by Facilities that lighting banks not be installed directly over a row of computers—saving much trouble with glare. These modifications were simple, cheap, and essential. Also, Nova's tinted glass, through which the recessed computer monitor is viewed, cuts back on light glare, as well.

Incidentally, we left the three windows in the wall, which looks out on the reference area. We found the ambient lighting from these windows very helpful, as is the ability to look into the room from the reference desk. It also opens the room up so that we don't have an enclosed cave effect.

• **Soundproofing.** Again, this is essential if the lab/electronic classroom is to be located anywhere but the most remote part of a library. Moore Library is designed with an open plenum (i.e., a false ceiling) to distribute air around each floor of the building. Therefore, soundproofing the area next to the reference desk (where the room is located) was a prime consideration.

Our Facilities managers convinced us that the simple act of putting in a drop ceiling (required for the new lights anyway) and new carpeting would take care of the problem. They were right. Had this simple solution not worked, they were prepared to use inexpensive fabric wall hangings to muffle sound further.

• **Heating, Ventilation, and Air Conditioning (HVAC).** A recent article noted that "Five computers can raise cooling needs by 25 percent, and 20 computers can double cooling needs."[3]

Moore Library as a whole limps along with a very old HVAC system and did not have the luxury of a budget for a new one for the lab. Our Facilities managers made sure that every available air duct was utilized for the new room and then tried to make sure there was adequate air return for circulation of air in and out of the room.

This last item is the only issue we are struggling with. Essentially, the temperature in the room evens out with the surrounding building while the doors are open, but gets stuffy when it is closed up for teaching. The plan to solve this is to hook up the room to an air-return duct to force air in and out of the room, which should equalize the lab/electronic classroom with the surrounding building.

• **One point of communication.** There must be one key person with the necessary authority through whom all relevant work and

decisions should flow. Any other arrangement will lead to confusion and lost work time.

Perhaps just as important, we can also note items that much of the literature has focused on but are either unessential or are not large problems anymore:

• **Interconnectivity.** Computers, networks, the Internet, and peripherals are much more easily integrated now. We either did not run into these problems or they were not extremely expensive or insurmountable.

• **Versatility of Data/LCD Projectors.** Electronic version adjustment with inverted image or rear projection (reverse image) capabilities are relatively new and much more common now. The option of mounting the projector on the ceiling, floor, or behind the screen truly allows it to be "portable" without image distortion.

Electronic shift and zoom are now available. Data/video quality has changed in about a year from 800 x 600 to SXGA quality. Brightness of image has increased significantly. The remote for the projector now includes a laser pointer with a black screen option. The instructor need not work in the projector light and the machine remains ready for use.

A video presenter takes the place of an overhead projector, saving significant space and consolidating presentation equipment on the instructor's workstation.

Training. Getting the librarians who were to use this kind of facility up to speed used to be a very large issue. It's now minimal. The user friendliness of software has improved significantly, and most students are aware of and familiar with standard software packages.

Architects. In such a bare-bones project, design for ambiance and atmosphere are nice, but not essential. Like many libraries, UR had to fit as much as possible into a small available space, and make it work for multiple uses.

The design issues turned out to be very simple: alternative arrangements allowed for too few computers and the design of a traditional classroom worked the best. It was simply a matter of making 12 computers work in the room and allowing enough room for an instructor.

• **Wiring.** The fragility of electrical and data wiring seemed to play an unusually large role in the literature. In such a small space, each of our rows is anchored to a wall. It was very simple to put surface data/electrical runs down each row of computers (from the ceiling) and attach the wires inside the desks. We have not run into problems in this area, including the mobile instructor's station.

How much?

• **Construction:** approximately $5,000 (demolition, drop ceiling, lighting, new carpet, paint, electrical wiring, HVAC, furniture construction, doors, etc., absorbed by Facilities since in-stock materials were used and the work was done as workers became available)

• **Electronic equipment:** 12 computers, high-volume printer: $28,500 (Dell OptiPlex GX-1 computers, Pentium I with CD-ROM drives, 64 MB of memory and 266 mhz. processor; Hewlett Packard duplex laser printer, model 8000N)

• **Presentation equipment:** $11,200 (Sharp model XG E3000U data/video projector—mounted near the ceiling on a structural column; Elmo video presenter model EV 400; 6' white screen)

• **Data hub:** Wiring and network hub: $4,000 (Hewlett Packard model HP J3303, A compatible RJ 45 cable, 10mbp)

• **Furniture:** approximately $7,400 (3 rows of countertop desks with 11 recessed computer-holding kits: front-row desks 11' 5" x 2' 4" with 3 computers; middle row desk 14' x 2' 4" with 4 computers; back row desk 14' 3" x 2' 4" with 4 computers, 23 standard office chairs—adjustable height and on rollers: 22 in rows, 1 at instructor's station, instructor's station, Nova 41" x 30"—Facilities modified to add to tabletop space)

• **Total cost:** $56,100 (Library expenditure: $7,400)

Note: Funding from the New Jersey Higher Education Infrastructure Act provided funds for computers, a printer, presentation equipment, and wiring.

• **Justification.** It is pretty well established that the effectiveness of resources such as electronic indexes, databases, and the Internet are best taught with a hands-on approach.

We mentioned this concept in planning documents in 1994 and 1996, and by the time we advocated getting a share of state funds for the facility, this was a generally accepted concept—even with those unfamiliar with our project or the work of the library.

Conclusion

One semester's experience of using our new library lab/electronic classroom leads us to believe we made the right decisions in building this combination facility. The fiscal problems of the past were overcome, and we have found that our in-house solutions for this modest, asymmetrical space have worked well.

Librarians and on-campus technical and facilities personnel all had more than enough experience and expertise to make this happen without a vast expenditure of monies.

Notes

1. Anita Lowry. "The Information Arcade at the University of Iowa," *Cause-Effect* 17 (Fall 1994): 38–44.

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Royal Van Horn. "Electronic Classrooms: Design and Use," *Phi Delta Kappan* 79 (November 1997): 254–255.

James Estrada. "Electronic Classroom Design: A Case Study," paper presented to the ACRL New England Chapter/Bibliographic Instruction Section, Workshop, June 12, 1998, Yale University.

2. C. William Day. "Technology for Older Schools," *American School & University* 69 (June 1997).

3. Ibid.

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("Observations . . ." cont. from page 525)

sources from the world of management at large.

• Taeock Kim and Frederick Isaac. "Key Words for New Managers" (ERIC ED304143).

This paper was presented at the July 1988 meeting of the Library Administration and Management Association (LAMA) at the ALA Annual Convention. It includes a bibliography of relevant articles.

• LAMA Middle Management Discussion Group. "You'll Manage: Become a Boss . . . Best Tips" (Chicago: American Library Association, 1980) (ERIC ED322904). This publication contains comments and anecdotal material from practicing library administrators. The bibliography draws chiefly on non-library sources.

• Anne McGreer. "Reflections on My First Year as a Library Middle Manager," *Library Administration & Management* 1/4 (September 1987): 131–133. Discusses the routines, hurdles, and accomplishments of a new supervisor in the technical services unit of a large academic library.

• Linda Wainscott. "I'm in heaven now or six months in hell: How to thrive as a new department head," *Unabashed Librarian 101* (1996): 27–28. ■

Letter to the editor

I really like *C&RL News,* read it from cover to cover, and often think that I need to let individual authors know that they are providing a great service by sharing their ideas. Sometimes I actually relay those thoughts.

I think my note to Gregory Anderson, author of "Cyberplagiarism" in the May 1999 issue, was pretty concise, "Excellent article in *C&RL News*!"

It was a very well written article on a timely subject. I truly appreciate the time and energy my colleagues contribute in order to share these practical ideas with readers like me.—*Kathy Kaldenberg, Kaskaskia College, kathyk@kc.cc.il.us*

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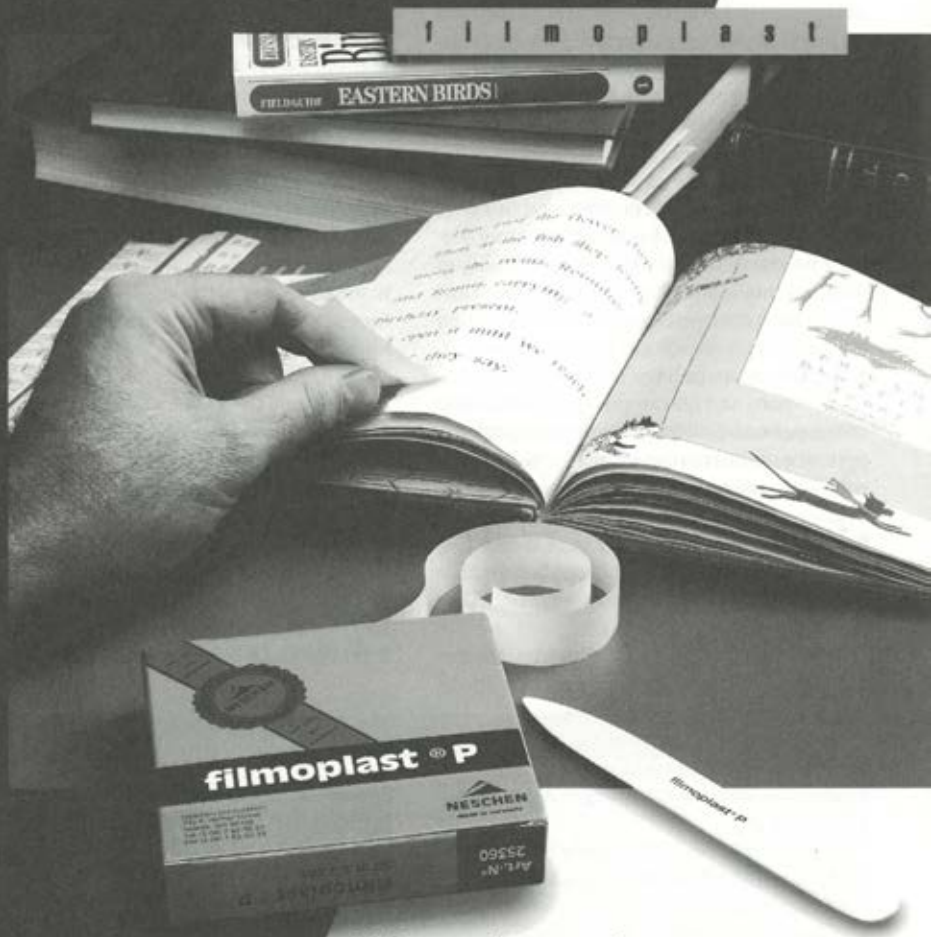

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