

# Developing Collaborative Workstations

*Careful consideration of student needs and testing of several prototypes yielded a successful model for collaborative workstations in the library*

By **Ralph B. Gabbard, Anthony Kaiser, and David Kaunelis**

Anyone who spends time on a university campus will notice the number of students working collaboratively on projects. These students often encounter problems finding a place with both space and equipment to support their work. Collaboration usually is also a bit noisier than other coursework. Although the library is often a main meeting place for students, libraries traditionally have not provided either space for or an atmosphere conducive to collaborative activities.

Indiana State University (ISU) is a medium-sized comprehensive university with about 9,000 students. The library provides a wireless environment with over 70 public personal computers on five floors. Students use the library heavily, especially as a place to work both individually and in groups. The question for librarians at ISU was, how can libraries provide support that makes effective collaborative learning possible?

## Project Plan

In fall 2002 a team of librarians and staff was organized to develop and evaluate collaborative workstation prototypes for the ISU library. We knew that ISU did not have the resources to develop collaborative learning spaces requiring extensive construction. Instead, we chose to explore models for a low-cost collaborative workstation. We had the initial goal of providing four workstations for students in the library. We determined that such a workstation

must seat three to six students around a personal computer and monitor. We developed several collaborative workstation prototypes, tested them, and selected one for implementation.

## Initial Prototypes

In starting the project, we determined some simple specifications for what collaborative workstations should provide, from furniture to processing power to monitors and wireless access to the university's network. The initial prototype configuration employed two pieces of equipment manufactured by the Bretford Company (<http://bretford.com>). The kidney-shaped table we chose measured 78 3/4 inches wide and 47 1/2 inches high and required an accompanying PC Pod that sat on casters (see Figure 1). Although the table was not height adjustable, the PC Pod's height could be adjusted from 27 1/8 inches to 35 3/8 inches. To complete this configuration, we ordered a CPU holder, a hopper power and data center (a container for cables), and a homerun electrical solution (a power strip), which were part of the PC Pod.

The second prototype we developed consisted of a set of trapezoid tables from the Gaylord Company (<http://www.gaylord.com>). Each table measured 48 inches by 24 inches and adjusted from 22 inches to 32 inches high. To seat four to six students required putting four of these tables together. The PC sat under the table, while the monitor was placed at the center back. (See Figure 2.)

**Figure 1**

### Kidney-Shaped Table Configuration



**Figure 2**

### Trapezoid Tables Configuration



We decided to use existing chairs and PCs. However, we decided to incorporate new ViewSonic flat-screen monitors for both prototypes. The existing PCs were Gateway E3600 systems with Pentium 4 processors running at 1.8 gigahertz. Each PC included a 32-megabyte video card, 256 megabytes of RAM, a 20-gigabyte hard drive, a DVD drive, two USB

ports in front and four USB ports in the rear, and a Cisco Aironet 350 series PCI wireless card.

Table 1 presents the costs for both prototypes, the kidney-shaped table configuration and the trapezoid table configuration.<sup>1</sup>

We held two informal sessions with student users of both prototypes. These students were members of a technical writing class that had been using the prototypes for about three weeks. About 25 students participated in this discussion. From the discussions we found that students seated at the edges of the tables used for either prototype had difficulty seeing the monitor. The placement of the PC on the floor or in the PC Pod made access to DVD, CD-ROM, and USB ports difficult. The first prototype also did not seat more than three students comfortably. In addition, we determined that both prototypes were rather expensive, especially the first prototype, given the goal of having at least four workstations available for students on the library's limited budget, so we decided to develop a third prototype.

After looking at the students, comments and our budget constraints, we decided to develop a third prototype that would address our cost concerns, provide seating for more students at each workstation with better viewing,

and address the problems students had accessing DVD, CD-ROM, and USB ports on the PCs. For the third prototype, we selected a half-circle table manufactured by K-LOG Inc. (<http://www.k-log.com>). The table is 48 inches by 96 inches and adjusts from 21 inches to 30 inches in height. The workstation configuration used a Gateway Profile 4LS All-in-One PC, which combines the computer and monitor, eliminating the need to find a separate location for the PC. This computer included a Pentium 2 2.0-GHz processor, 256 Mbytes of RAM and a 60-Gbyte hard drive, a DVD drive, six USB ports, and a 17-inch LCD flat-panel display. A Cisco AIR-PCM 352 wireless adapter card was also installed in the configuration. A second ViewSonic 18-inch VG800 LCD flat-screen monitor was added to address the complaints of student users that they couldn't all see a single display screen when working collaboratively. Figure 3 shows the final configuration of table, PC, and monitors.

Table 2 provides the final cost figures for this prototype.<sup>2</sup> While the overall cost escalated with the addition of a new PC and second monitor for each workstation, the changes responded to user comments and provided more value for the cost than the initial prototypes. For a cost of \$19,572, the library was able to provide seven additional collaborative

learning stations for students for a total of nine collaborative learning stations (there are two of the second prototype stations in use).

Lessons Learned

These workstations have been widely accepted by students, with heavy use during evenings and weekends especially. We recognized that students working collaboratively would be somewhat noisy; therefore, the first floor was designated as an area for conversation. The remaining floors (second, third, lower level, and basement) were zoned as quiet floors. In addition, we placed the collaborative workstations as far apart as possible to reduce noise.

Maintenance for the workstation PCs was included in the normal library-wide maintenance plan. The library's reference desk provides help for any problems associated with the workstations. Hardware and software problems are referred to the library's Systems Department if the reference desk personnel are unable to solve the problem.

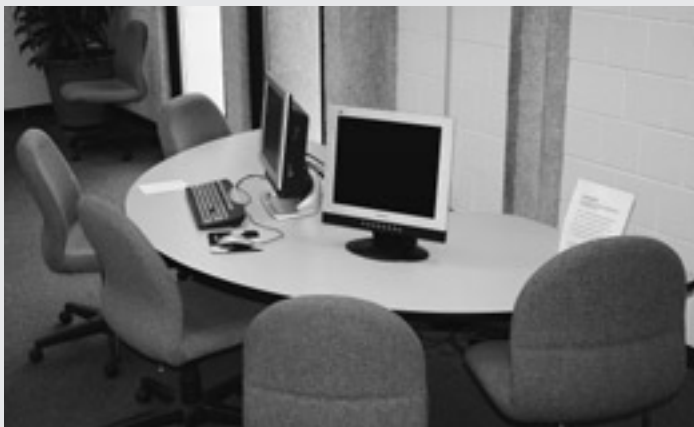
Comments from faculty have been quite positive as well. While we expected heavy use by business and education students who traditionally have assignments requiring collaboration, the use by other groups—such as nursing students—surprised us. One faculty

Table 1					
Cost of Initial Prototypes					
Configuration	Table	Miscellaneous	Monitor	Total Cost Per Unit	Total
One kidney-shaped table	\$1,759.00	\$1,354.00 (Pod); \$229.00 (wireless card)	\$769.00	\$4,111.00	\$4,111.00
One set of four trapezoid-shaped tables	\$784.00 (4 @ \$195.95)	\$229.00 (wireless card)	\$769.00	\$1,782.00	\$3,563.60

Table 2					
Final Prototype Costs					
Configuration	Table	Wireless Card	PC	Monitor	Cost per Unit
Adjustable-height table	\$178	\$130	\$1,719	\$769	\$2,796
Total Cost (7 workstations)	\$1,246	\$910	\$12,033	\$5,383	\$19,572

**Figure 3**

### **Final Workstation Configuration**



**Figure 4**

### **Placement of Collaborative Workstations**



member who teaches technical writing brought her students to the library to work collaboratively on the library's workstations. Other faculty have scheduled classes in the library using the collaborative learning stations.

Comments from students are uniformly positive, as evidenced by the following:

It has been very beneficial for me to have the collaborative workstations to meet with groups for my classes. Almost everything I do for school is on the computer, so having a way to work in a group setting at the computers is very helpful.

The assistant head of reference at ISU libraries commented that

The collaborative workstations are a key resource at the library because they are the only location on campus where students are given the opportunity to work collaboratively on projects that require computer access. Multiple screens and a larger work space provide a comfortable environment for groups of three or more students to work creatively toward a common goal.

The ISU team succeeded in developing a low-cost but highly effective collaborative workstation configuration

that has made a significant positive impact on students and the library. For now, the library intends to wait and see how the university's laptop initiative affects future use of the workstations. Figure 4 shows the collaborative workstations' current placement in the library. *e*

### **Acknowledgment**

This article is based on the presentation "Rethinking the Library for Collaborative Learning" by Ralph Gabbard, David Kaunelis, and Judy Tribble, in *Brick and Click Libraries: Proceedings of a Regional Academic Library Symposium* (Missouri State University, Maryville, Missouri, October 10, 2003), pp. 54-62 (ERIC ED489983).

### **Endnotes**

1. Prices in Table 1 were 2002 prices. Using 2006 prices, the kidney-shaped table is \$2,200 and is adjustable. The PC Pod is no longer necessary with the 2006 table. ViewSonic no longer makes the 18-inch VG800 monitor; however, the ViewSonic 19-inch VA903B LSC monitor (at \$238.99 without the educational discount) is a comparable replacement. The trapezoid-shaped tables are \$190 in 2006 prices. The prices for wireless cards have dropped dramatically since 2002 and now range from \$35 to \$115.
2. Prices quoted in Table 2 were 2002 prices and reflect the educational discount. Using 2006 prices and models, the table from K-LOG costs \$209, although there is both an educational and a quantity discount. Gateway has a new version of the Profile PC; the Profile 6 with a wireless card is \$1,244 (the educational discount is not reflected in this price). The total 2006 cost of a collaborative workstation is \$1,691.99 versus the 2002 price of \$2,796.00.

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