

Wireless Computer Labs

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INTRODUCTION

In February 2000, three seemingly unrelated events came together to present a unique challenge at one mid-Atlantic university—a challenge that is being experienced more and more by colleges and universities across the country.

First, the faculty approved a new undergraduate teacher preparation curriculum that would include instructional technology in both the first two semesters of the freshman year and three semesters in their junior and senior years—12 new sections of technology-based training. Second, a graduate degree in instructional technology was growing beyond even its most optimistic predictions. In less than four semesters, enrollment increased from 24 to 140 students. Third, funds, staffing support, and classroom space had not been programmed for yet another much-needed computer facility and renovations to available space were cost-prohibitive.

To meet the demands for more technology resources, a new multimedia classroom was proposed. Estimated to cost over \$200,000, the proposal was rejected by senior administrators due to budgetary considerations. It was clear that to resolve this dilemma, the program director needed to think “outside the box”.

Enter the wireless lab. With 29 multimedia-ready classroom and student computer labs already on campus, weaknesses in pedagogy had been recognized for years. Increasingly, labs contain outdated hardware and software. The inflexibility of scheduling, location, and access to desktop capabilities made computer labs unattractive to many faculty members. And the cost! For the price of a single multimedia-ready classroom, a department can purchase 3–4 portable wireless labs, incorporating the power of technology with the more traditional classroom. Wireless carts can be rolled into classrooms, making scheduling conflicts a thing of the past. CDROM, printers, and overhead projectors can be appended to the cart with little hassle. And, perhaps most important, with the deployment of a wireless ac-

cess point, only one network connection is required to make all 24 computers Internet-ready.

The wireless lab was identified as the most promising technology to address these issues. It enables an entire class to be online at the same time—simultaneously surfing different Web sites, accessing e-mail, creating documents, and swapping files through a single Internet connection. It seems the perfect cost-effective solution for schools with limited budgets and facilities at capacity or those who simply want a more flexible networking solution. The specific advantages of a wireless lab are best represented by examining how it was integrated into six university courses and programs.

The university’s *Introduction to Educational Technology* course is similar to many such first-year familiarization courses. It provides an introduction to the various classroom technologies. Students use the wireless lab to master the complete set of basic skills and competencies required before entering the masters program. Using the laptops, students are introduced to word processing, spreadsheets, graphics presentation, and the Internet. The lab offers students more opportunities for both abstract and concrete, practical hands-on experiences. Using wireless labs frees the multimedia facility for more classroom-centered teaching (and technology-intensive applications) while offering the complete suite of software, hardware, and network concepts demanded of the graduate program in technology. One anecdotal comment lifted from a student’s evaluation claimed, “When then instructor rolled in that wireless lab, learning really took off.”

A companion course, *Assessment of Instructional Technology*, evaluates “best practices” for using instructional technology in the classroom and was previously taught without technology due to space and access considerations. The wireless lab allows students to simulate online quizzes, download test banks, and demonstrate educational software. The flexibility provided by the wireless lab made all the difference in student understanding of the material while providing them the ability to work at their own pace.

Two other non-technical courses, *Social Studies Methods* and *Elementary School Administration*, advanced the practical applications of the wireless lab. Two faculty members needed online access at the same time, so another innovation was initiated in the school. The wireless lab was divided into two to serve both classes simultaneously. Faculty simply rolled the cart into the third floor hallway, distributed 14 machines to one class and 10 machines to the other—and both classes were up and running within minutes.

Even more flexibility was demonstrated in the *Behavioral Disorders* course for special education teachers. Providing a current overview of the field of education for persons with serious emotional disturbances, research is paramount as students explore diagnosis, assessment, treatment, intervention, and prevention strategies. The course validated on-demand technology in the classroom. The wireless lab was used several times during the semester when the class explored factors contributing to behavioral classroom disorders. The instructor was not always able to plan exactly when the research phase of each topic would begin; as a result, scheduling was haphazard and conflicts were common. Using the wireless lab as an on-demand technology resource created the flexibility to re-locate the cart to any classroom equipped with a single network connection. Theory and “book learning” were the previous means of exploring these topics. With the introduction of the wireless lab, students were able to conduct both individual and group discovery learning exercises. Initial feedback from students was extremely positive, some even claiming that the portable computers helped them understand the practical side of special education.

A special program for preparing school district superintendents found the wireless lab a perfect tool for introducing senior administrators to laptop, wireless technology. The lab was brought into their seminar room and, together, the participants explored the Internet locating information pertinent to school board issues, budget and funding school districts, in-service training programs for their teachers, computer purchases, student safety issues, and so forth. Practicing administrators found a resource suitable for small group learning situations, from 3-5 student seminar rooms with an overhead projection system and printing capability suitable for classroom discussion. The wireless lab was equally effective in this small seminar room environment. The

portable laptops permitted the instructor to break down the class into focus groups, with each group using the computers to access information particular to their assigned topic. Participant comments included: “The wireless lab was absolutely wonderful. Convenience and practicality are just two words to describe this innovation. I would love to have this in our schools.” (Assistant Superintendent of Schools, Pittsburgh). Here’s another, “...very innovative approach in linking us to technology to work together as a team on a grant proposal as we were circled about each at one table. I found that the lab provided us convenience (never leaving our classroom), accessibility to the Internet, better communication in working as a team, and personal instruction” (Director, Special Education).

ISSUES

Of course, with any technology, serious debates are needed to ensure the appropriate application of the technology for teaching and learning, so, too with wireless labs. Here are some particularly poignant concerns for consider.

Keeping Laptops Safe

Most student desks do not provide adequate space for a laptop which can lead to accidents. Security can also be an issue with laptop computers; their size makes them easy targets to slip one out of the classroom undetected. In fact, a recent theft from one middle school computer lab reduced the number of laptops from 51 to 32 in one weekend incident. Most schools will lock down their carts when not in use and store them in a secure location. Often theft is reduced by the demand for laptops to recharge after each extended use, making them tied to a power source that is often dedicated only to the cart and contained within a secure area. Laptops are most vulnerable at the end of a class period when instructors as well as students are moving quickly to their next class. After school opportunities for theft are also numerous. A balance must be maintained with the flexibility of laptops, the convenience of wireless carts, and the vulnerability of both to pilfering. It takes a diligent teacher to keep laptops from being broken, vandalized, or stolen outright.

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