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# Wireless Takes Off In, Out of Classrooms

## Districts integrate technology for portability, to broaden existing networks

Four years after the first 'Net Day mustered a volunteer effort to wire schools to the Internet, districts throughout the country are employing wireless to augment existing networks, expanding the flexibility, reach and accessibility of technology for instruction and communication.

"It seems to be catching fire," says Jim Henderson, project manager of high school transformation for the San Jose, Calif., Unified School District, where a wireless network was purchased this fall.

President Bill Clinton in October told government agencies to work with the Federal Communications Commission and private industry to speed up implementation of high-speed wireless communications technology, which would allow a broader range of information to be carried via wireless.

"The wireless industry as a whole is roiling with change," says Aleck Johnson, a Washington, D.C.-based consultant who follows telecommunications policy.

Amid the flux, schools are testing its educational applications.

"I just installed a wireless lab in one of my grade 4 and 5 schools. It consists of 18 standard Win 98 notebook computers with a 3Com access point," says Steven Moskowitz, director of technology for Brewster Central School District in Brewster, N.Y. "The entire thing is in a lockable cart. Teachers plug the access point into the classroom data jack, then pass out the notebooks to the kids sitting at their desks, and away they go."

Brewster is not alone.

### Schools Testing Applications

- The San Jose Unified School District this fall purchased 60 Apple iBooks and other necessary hardware and software to allow the 120 students in its Leland High School Freshman Academy to learn in a technology-rich environment.
- The Comal Independent School District in Texas has wireless labs at six of its campuses.
- Medinah School District 11 in Roselle, Ill., is piloting a

wireless lab, used by the Spanish and language arts teachers, with 12 laptops tied into the district's server via sensors in a portable cart and ceiling installations.
- Baldwin Park, Calif., School District has contracted with Worldwide Wireless Networks to supply wireless Internet connectivity in all classrooms and two common areas of Sierra Vista High School.
- Illinois Valley Central Unit District 321 in Chillicothe, Ill., installed radio-wave antennas and receivers in its four schools five years ago to provide Internet access from a single T1 connection to every classroom.

## Infrastructure Advantage, Flexibility Cited

"If you're building a new school or retrofitting an older facility, generally it's more cost effective to go with a wired system," Johnson says. However, wiring can be a "huge cost" in retrofitting a computer lab, so that with older schools there's an advantage to wireless, not the least of which is containing the asbestos headache by avoiding opening up walls and ceilings, he says. "Cost effectiveness really depends on the situation," he says, referring school officials to the list of eligible services for E-Rate discounts for information on subsidies for Internet connections in general.

"The big advantage is you don't have to invest in significant infrastructure," Henderson says. "For 30 drops, you need three wires, rather than 30." Leland High School's wireless setup cost $100,000 for the 60 computers, a cart used for charging, the six antennae called "airports" that plug into wall sockets and software, according to Henderson.

Among the purchases made by the Medinah School District to power its pilot with wireless were IBM Thinkpad computers at $1,600 each, plus $8,400 for the cart that links the laptops with the district's server.

Wireless allows schools to adopt a more flexible model for computer use, by virtue of its portability. While 90 percent of U.S. schools now are connected to the Internet, often those connections only are available at a single location, such as a computer lab, Johnson says.

"What it gives us is flexibility," says Medinah Superintendent Mitchell Bers. "Right now I have a lab in every school. That takes a room; teachers need to sign up for it…If you need space, (with wireless) you can convert that (lab) back into a classroom," he says. The district will be testing wireless at another school next year to see if there is interference from a nearby radio transmitter not owned by the district and whether a multilevel building (the current pilot is in a one-story school) will be problematic either for signal interference or for moving the cart.

## Beyond School Walls

Wireless applications in school districts also are taking education and access to technology beyond the school walls. Henderson notes that the battery-operated computers used at Leland can be used outside, as transmissions carry 150 feet and through cement walls.

Other schools are using wireless to carry education even farther from the schoolhouse doors. River Hill High School in Clarksville, Md., is piloting the use of handheld devices for students to enhance communication with their teacher and offer opportunities for learning outside of the classroom. Access is being provided by Baltimore-based MindSurf, a joint venture of Sylvan Learning Systems, Aether Systems and Critical Path.

"At River Hill High School, we recognize the importance of technology and the expanding role it plays in today's classroom," said River Hill Principal Scott Pfeifer. Besides school-specific content, the partnership will provide students with electronic books, educational tools such as a graphing calculator, dictionary and thesaurus, and access to selected sites on the Internet. The pilot also will allow one-to-one and one-to-many communications, so teachers can send homework assignments, course schedules and school specific events to students.

Anticipating the market, Scholastic Inc., eHomeroom, MobileQ and others this fall announced plans to provide new applications for handheld devices specifically geared to teachers, students, parents and school administrators.

Meanwhile, Paterson Public School District in New Jersey is among school divisions nationwide using wireless to tackle a longstanding issue in schools—the lack of adequate voice communication among classrooms, grounds and offices. A new $2 million wireless communication system there includes 800 handsets, providing 3.3 million square feet of coverage in 40 separate facilities, according to a press release from Avaya, which completed installation of the system in September.

Natalie Carter Holmes, Editor

American Association of School Administrators
801 N Quincy Street • Suite 700 • Arlington, VA 22203-1730
**Phone** 703.528.0700 • **FAX** 703.841.1543
**http://www.aasa.org** e-mail webmaster@aasa.org