

eSCHOOL NEWS

Technology News for Today's K-20 Educator

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Personal response systems take the fear out of class

From eSchool News staff and wire service reports

Bored, bashful, and befuddled students all dread the moment when a teacher calls on them in class. But in a growing number of schools today, students no longer have to pray that the more prepared students will raise their hands: Electronic personalized response systems (PRS) technology is eliminating the fear factor, while providing teachers with instant feedback about whether their students understand the material.

At Linn-Benton Community College in Albany, Ore., students in Greg Mulder's physics classes use a small electronic device that resembles a television remote control to punch in responses to questions. The process can be as simple as the instructor breaking up a long lecture with one or two questions, or as complex as gathering responses to a complete test.

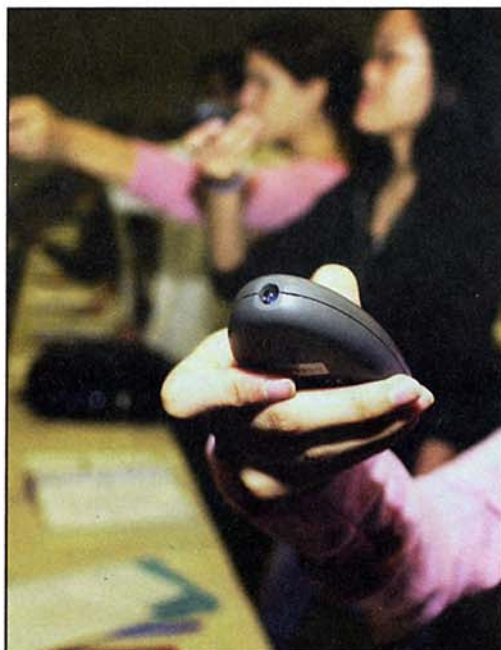
Students are assigned an ID number, so their responses are anonymous on the large projector screen at the front of the lecture hall. Mulder, however, knows their identity and can track whether individual students are getting the material.

"The problem with large classes is that it's difficult to get students actively involved," said Mulder, who has taught at the college for nine years. "It's well-known that after 15 minutes of lecturing, we start losing students' interests. We need to keep them involved."

Students often don't like to raise their hands in class, fearing a wrong answer will make them look foolish. PRS technology helps teachers keep kids engaged, while tracking instantly whether students understand the concepts being presented or need further review.

Mulder said there have been times when the system has helped him get confused students back on track early in a term. He said it takes a little more class preparation to use the system effectively, but it's well worth it.

"It's easiest to stand up front and lecture away," he said,



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PRS technology can make class more interactive.

"but it's also the least effective method" of instruction.

PRS technology allows a classroom full of students to vote on a topic or answer a question simultaneously. Each person has a remote control that communicates with a computer via receivers located around the room. After a set time—or when all participants have answered—the system shuts off and tabulates the results. Typically, the results are made available instantly to participants via a bar graph displayed via projector.

In cases where the tracking of responses is required, the

ID number of each clicker is entered into the control computer's database and matched to a particular student.

Besides the presenter's computer and a projector, the typical system consists of a base station (receiver), wireless keypads, and PRS software. The systems transmit data from the keypads to the receiver in one of two ways: radio frequency (RF) or infrared (IR). A few companies also offer browser-based software that routes the data via an IP address.

RF systems are ideal for large-group environments, because they do not require a line of sight to operate and can accommodate hundreds of users on a single receiver. With some systems, multiple base stations can be linked together to handle audiences that number in the thousands. Because the data travel via radio frequency, users merely need to be within range of the receiver (100 to 300 feet).

IR systems are better suited for smaller groups. They use the same technology as a TV remote control and require a line of sight between the keypad and base station. This works well for a single keypad but sometimes fails when signals from multiple keypads arrive simultaneously at the receiver. IR systems are typically more affordable than RF systems, but they don't provide information back to the keypad.

Browser-based systems are still in the early stages of development. They are software-only systems, intended to work with students' existing wireless devices, such as laptops or PDAs. The software resides on the computer of the instructor, who creates a polling session with an assigned IP address. Participants log in to that IP address through their own internet-enabled device. Their information is transmitted through the IP address to the instructor's computer. It then can be displayed through a projector and also on each student's wireless device. Because the transfer of data goes through an IP address, proximity to a base station or line of sight are not issues.

Several systems have emerged in recent years. To help you sift through the many choices, we've profiled a few of the leading solutions in the chart on the next page. **eSN**

System	Standard configuration	System requirements	Method of communication	Input device (keypad/display)	Special features	Price
Interwrite PRS (Interwrite Learning)	32 units; also available in browser-based version	Windows 2000 or later; Mac OS 10.3.9 or later; also Linux-compatible	IR, RF, or IP	IR version: Alphanumeric (A-J) keypad RF version: Alphanumeric (A-E) keypad; 2-line LCD display	Includes high- and low-confidence options, an integrated gradebook, and a self-paced testing mode (on RF version).	\$1,461 (IR version); \$1,887 (RF version)