Getting Through to Students Faster — With a Remote

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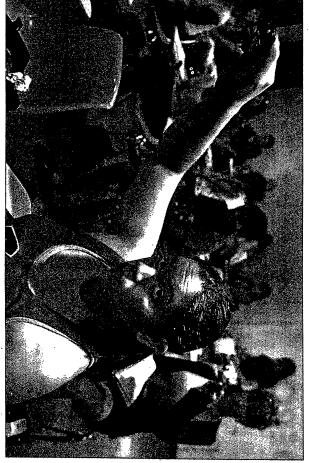
GRAYSLAKE, III. — As College of Lake County biology proflessor Mark Coykendall described the importance of metabolism and cellular energy, he noticed the class was growing restless and bored.

plex molecules from simpler ones is called ..." All conversaslim sapphire-colored remoteside the lecture hall reached for were paying attention, Coykenected an answer. oing through TV channels, sehem at the screen and, as if flipion stopped. The 42 students inhe lectern: "Synthesizing compopped up on a screen behind multiple-choice and typed in a few commands. A dall walked over to his computer To make sure the students devices. They question pointed

Less than a minute later, a graphic flashed on the screen showing that all but four correctly chose "A: Anabolism."

"At least none of you picked the made-up word," Coykendall said with a grin. "This really needs to be clear in your minds before next week's exam. Let's go over it one more time."

In an effort to find better ways to teach students who have grown up in the Digital Age, higher education instructors



DAVID TROTMAN WILKING CHEAGO Tribune AIMING HIGHER: Student Angle Barone, 25, points her remote at a selection as she takes a quiz.

and schoolteachers say they are frequently turning to high-tech no tools such as wireless personal tracersponse systems.

Better known as clickers, the devices help educators quickly figure out whether students are staying focused and learning the material

Some teachers use the technology as a means of keeping track of attendance. Others rely on it to ask impromptu questions in a classroom or spring a pop quiz.

their own classrooms.

"The key for me is the immediate feedback," said Coykenseen a marked improvement in

performance using clickers

instructors say they've

some

Though industry watchers say there is limited comprehensive research that tracks student

dall, who began testing clickers in his classroom two years ago. "If you just lecture and ask if they

understand, they'll nod their heads — even if they're lost. This way, if I ask them a question, I know right away if I need to slow down or keep going."

The system is relatively easy to use. Each student has a unique identifying number, which is programmed into the clicker.

When a student presses a button, the clicker sends a signal to a small electronic receiver mounted on a wall near the front of a classroom or lecture hall. The receiver is connected to a nearby computer, which tallies each answer and tracks the results.

"At first, students were complaining that they felt like Big Brother was watching them," said Eric Mazur, a physics professor at Harvard University and longtime advocate of such tools. "But over time, they adapted. It went from a cool thing to a real tool with practical applications."

The high-tech industry has transformed the educational system, with innovations such as student-run book swap websites, laptops used for note-taking and Internet videoconferencing the miles between teachers and students living in remote areas.

Engineers and instructors have been tapping into electronics to make the classroom more

interactive for decades. In the 1960s, students at Cornell University used doorhells that were attached to their desks to answer questions, said Mazur, who wrote "Peer Instruction: A User's Manual."

"As the cost of wireless tecknology has fallen, it's easier for schools to pay for clickers," Mazur said.

Nearly 800 schools use clickers made by einstruction Corp., a firm based in Denton, Texas Company officials said 1.5 million of their clickers are in use off-elementary, secondary and college campuses.

A rival manufacturer, Maryland-bassed GTCO CalComp, said it has sold more than 500,000 of its InterWrite PRS to schools since 1999.

Some campuses provide the clickers to students for free, while others require students to pay for the devices and the code to make it work. The tab can run from \$5 to nearly \$50.

"It can get a little expensive, #4.

you have to use it for more than a class or two," said sophomore than Lee, 19, who is taking Coyal kendall's biology course. "But I like it. It forces me to come to class, because we use the clicker to sign into the attendance sheet. With my books and notes and celiphone, it's just one more thing you have to bring to class."