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At School, Technology Starts to Turn a Corner

By **STEVE LOHR**

COUNT me a technological optimist, but I have always thought that the people who advocate putting computers in classrooms as a way to transform education were well intentioned but wide of the mark. It's not the problem, and it's not the answer.

Yet as a new school year begins, the time may have come to reconsider how large a role technology can play in changing education. There are promising examples, both in the United States and abroad, and they share some characteristics. The ratio of computers to pupils is one to one. Technology isn't off in a computer lab. Computing is an integral tool in all disciplines, always at the ready.

Web-based education software has matured in the last few years, so that students, teachers and families can be linked through networks. Until recently, computing in the classroom amounted to students doing Internet searches, sending e-mail and mastering word processing, presentation programs and spreadsheets. That's useful stuff, to be sure, but not something that alters how schools work.

The new Web education networks can open the door to broader changes. Parents become more engaged because they can monitor their children's attendance, punctuality, homework and performance, and can get tips for helping them at home. Teachers can share methods, lesson plans and online curriculum materials.

In the classroom, the emphasis can shift to project-based learning, a real break with the textbook-and-lecture model of education. In a high school class, a project might begin with a hypothetical letter from the White House that says oil prices are spiking, the economy is faltering and the president's poll numbers are falling. The assignment would be to devise a new energy policy in two weeks. The shared Web space for the project, for example, would include the White House letter, the sources the students must consult, their work plan and timetable, assignments for each student, the assessment criteria for their grades and, eventually, the paper the team delivers. Oral presentations would be required.

The project-based approach, some educators say, encourages active learning and produces better performance in class and on standardized tests.

The educational bottom line, it seems, is that while computer technology has matured and become more affordable, the most significant development has been a deeper understanding of how to use the technology.

"Unless you change how you teach and how kids work, new technology is not really going to make a difference," said Bob Pearlman, a former teacher who is the director of strategic planning for the New Technology Foundation, a nonprofit organization.

The foundation, based in Napa, Calif., has developed a model for project-based teaching and is at the forefront of the drive for technology-enabled reform of education. Forty-two schools in nine states are trying the foundation's model, and their numbers are growing rapidly.

Behind the efforts, of course, are concerns that K-12 public schools are falling short in preparing students for the twin challenges of globalization and technological change. Worries about the nation's future competitiveness led to the creation in 2002 of the Partnership for 21st Century Skills, a coalition whose members include the Department of Education and technology companies like Apple, Cisco Systems, Dell and Microsoft.

The government-industry partnership identifies a set of skills that mirror those that the New Technology Foundation model is meant to nurture. Those skills include collaboration, systems thinking, self-direction and communication, both online and in person.

State officials in Indiana took a look at the foundation's model and offered travel grants for local teachers and administrators to visit its schools in California. Sally Nichols, an English teacher, came away impressed and signed up for the new project-based teaching program at her school, Decatur Central High School in Indianapolis.

Last year, Ms. Nichols and another teacher taught a biology and literature class for freshmen. (Cross-disciplinary courses are common in the New Technology model.) Typically, half of freshmen fail biology, but under the project-based model the failure rate was cut in half.

"There's a lot of ownership by the kids in their work instead of teachers lecturing and being the givers of all knowledge," Ms. Nichols explained. "The classes are just much more alive. They don't sleep in class."

IN Indiana, the number of schools using the foundation model will increase to six this year, and an additional dozen communities have signed up for the next year, said David Shane, a member of the state board of education. "It's caught fire in Indiana, and we've got to have this kind of education to prepare our young people for the future in a global economy that is immersed in technology."

The extra cost for schools that have adopted the New Technology model is about \$1,000 per student a year, once a school is set up, says Mr. Pearlman of the foundation. After the first three years, the extra cost should decline considerably, he said.

In England, where the government has promoted technology in schools for a decade, the experiment with technology-driven change in education is further along.

Five years ago, the government gave computers to students at two schools in high-crime neighborhoods in Birmingham. For the students, a Web-based portal is the virtual doorway for assignments, school social activities, online mentoring, discussion groups and e-mail. Even students who are suspended from school for a few days beg not to lose their access to the portal, says Sir Mark Grundy, 49, the executive principal of Shireland Collegiate Academy and the George Salter Collegiate Academy. Today, the schools are among the top in the nation in yearly improvements in students' performance in reading and math tests.

Sir Mark says he is convinced that advances in computing, combined with improved understanding of how to tailor the technology to different students, can help transform education.

"This is the best Trojan horse for causing change in schools that I have ever seen," he said.

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