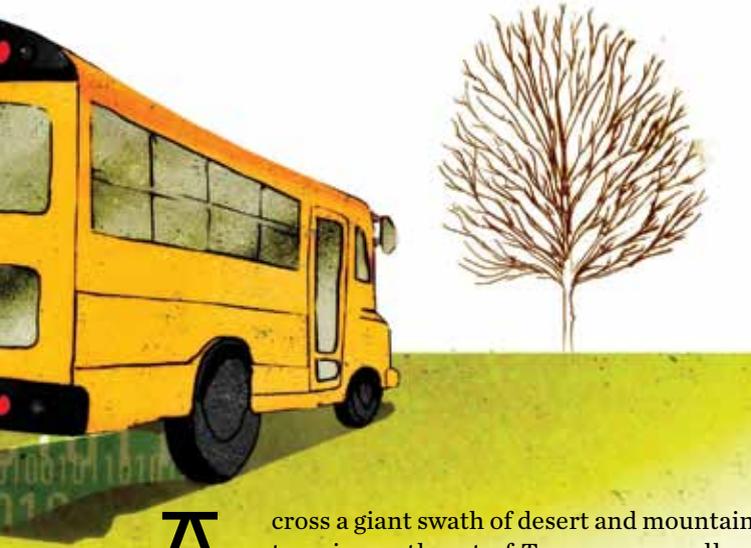




# HIGH TECH IN SMALL PLACES

Computers and the Internet help rural schools bridge vast distances—both geographically and culturally. But the growing use of technology can create new problems as it solves old ones.

BY NIRVI SHAH



**A**cross a giant swath of desert and mountain terrain southeast of Tucson, one yellow school bus has been carrying an extra passenger since last fall.

Along with dozens of students, the bus rolls through the Vail School District's most far-flung portions equipped with a wireless router. It delivers the Internet to students for as many as three hours a day on their long commutes to and from school in rural Arizona.

Instead of just hanging out, sending text messages or hunching over homework in their laps, high school students can now do research and e-mail their teachers as they ride.

It's just one way in which rural school districts are tapping into technology to improve student achievement. In northernmost Alaska, many students have been given their own laptops. In western Washington State, students take virtual classes their small high school cannot offer. And in tiny Howe, Oklahoma, students produce their own virtual field trips to far-flung places.

These programs are part of a broader national effort to bring technology into the classroom. The Obama administration has endorsed a plan that would help every student learn through digital technology using cell phones, laptops and other mobile devices.

Vail's so-called "Internet Bus"—once just an inexpensive experiment—is already paying off for students.

"It doesn't just restrict your homework to math that you can do on the bus," said Jerod Reyes, a freshman at Empire High.

"You can do world history research or English research," said Reyes, who spent a recent ride to school looking up information about Roman gladiators.

Reyes, 15, has a laptop issued by his school, a program offered by two of Vail's three traditional high schools, so many of the classmates on his bus have them, too. He's perfectly happy to spend the bus ride as he used to—but he has become accustomed to the access to wireless Internet.

"It's not like I use it everyday, but it's there if I need it," he said.

#### "A Darn Good Deal"

So far, the district has outfitted only one of its buses with a router. They didn't win a grant that would have paid to transform all 20 high school buses, said Matt Federoff, the school district spokesman.

But the price may be right even without the grant: Each device costs only a few hundred dollars, plus \$60 a month for wireless service. He said, "It's a darn good deal."

The district, which has several other technology-based initiatives, was already pondering the idea of turning its buses into classrooms when Federoff saw an ad for a wireless router that could be used in a car.

"When I saw the ad in the electronics catalog, it talked about putting this device on an SUV to keep kids quiet," Federoff said. "I wasn't thinking of the behavior angle. That was never the intention."

Instead, the hope was to turn the time kids spend on the bus into something more productive. About 400 of Vail's roughly 3,000 high school students spend at least an hour or more on the bus every day.

"We have 186 school days and [because of their bus rides] students spend 15 entire days stuck on the school bus. We give them those 15 days back," said Federoff, who recalls his own long rides through rural Arizona to and from school. "We turn transit time into classroom time."

The district, though solidly middle class with just 11 percent of students considered to be living in poverty, is sprawling enough that Internet access simply isn't available for some students at home.

"Some of those kids are from ranching families that could afford it, but there's no infrastructure," he said. For example, a cluster of just three or four houses might require a company to lay dozens of miles of cable.

In addition, after riding home on the bus, "if you're a ranch kid, you've got chores. You might not even get to your homework until eight." With Internet access on the bus, many students can get to a lot of their homework well before then.

The connection is pretty solid, only turning spotty when the bus ventures along winding roads and through steep hills. It's fast enough for students to surf to mostly text-based sites, Federoff said.

"They run fairly well on low-bandwidth connections—it's not for YouTube," he said.

The router isn't just for daily school bus runs. When a soccer team traveled 225 miles to a game, the bus served as

a wireless hotspot for the whole team, including the coaches.

Federoff said the concept furthers the district's ideology that all learning doesn't take place in the classroom.

"The learning really happens at odd moments of the day. It also happens outside of classes," he said. "The magic just doesn't have to be for those 55 minutes" of classroom time.

### No Magic Bullet

However, the use of technology to solve educational problems often creates controversy. For instance, not everyone is impressed with the idea of turning school buses into classrooms. Many rural school advocates say that it helps make people comfortable with the idea of epic-length bus rides.

"If bus rides are so long that we have to try to invent ways to make the time useful, the problem is the length of the bus ride," said Marty Strange, policy program director at the Rural School and Community Trust. "All that does is show that certain kids will take advantage of every opportunity, no matter how bad you abuse them."

Technology's problems don't end there when it comes to rural schools. Bringing up-to-date technology to a school district can be expensive, despite grant money and bond issues. And without teacher training—that sticks—and teachers who adapt, the investment may be wasted.

In Alaska's North Slope Borough District, which is the size of Minnesota, technology seems like the ideal bridge between the district's eight villages, connected only by air in the winter and sea in the summer.

Students from fifth through 12th grades have their own laptops—an investment the community hoped would help improve students' math and reading skills.

But many computers were damaged or lost, and many families don't have Internet access at home. The computers now remain at school after hours. Internet access comes from a satellite, which yields a speed a little bit slower than a landline. So even at school, streaming video is too much of a strain on the district's bandwidth.

"I'm not exactly sure how well it has worked," instructional technologist Linda Frink said of the undertaking. The first two years of the laptop program, there was major teacher turnover. "Having teachers knowledgeable about how to use the computers and integrate them into lessons is the key to making them work." In some cases, Frink had to teach teachers the machines' basic functions.

Teacher turnover is an issue in many rural school districts. But the problem can be especially acute in Alaska. "Like today, we still haven't gotten the sunrise," Frink said. "There's no orb in the sky. There hasn't been in months. It's 55 below with the wind chill. Having to walk to work and get places—a lot of people just can't handle that."

### A Technology Mindset

Farther down the Pacific Coast, however, in western

Washington State's Quillayute Valley School District, school-based technology has met with more success. The main town here is Forks, the setting for the *Twilight* book series. Forks has about 3,000 residents, and the high school boasts of only 350 students.

Like many rural schools, Forks High has the staff and resources to offer a fairly limited number of classes. As a member of Virtual High School, based in Massachusetts, Forks High can now offer 100 spots in courses its students would otherwise never get to experience. Without the program, says English teacher Elizabeth Sanches, "our school has one Advanced Placement class. We have high poverty in our district. It helps level that playing field."

Technology can help rural districts overcome their isolation in other ways. Over the last 10 years, starting when Superintendent Scott Parks came to town, the 500-student Howe Public School District in Oklahoma has built a technology mindset along with a store of actual hardware.

In a district where 80 percent of students live in poverty and a third are American Indian, all third- through eighth-graders have Macbooks and high school students received less expensive netbooks this year. SmartBoards in classrooms across campus record lessons that can be taken home on iPods.

The stars of the district's array of technology are elaborate, feel-like-you're-there virtual field trips. They began in 2003, when students produced their own trips for the Center for Interactive Learning and Collaboration in Indiana.

This has allowed students to travel to the Mote Marine Laboratory in Florida, the Baseball Hall of Fame in New York and Australia's Great Barrier Reef without leaving school. Howe is two hours from the nearest zoo or museum—one way.

Parks said professional development was integral to making the technology initiatives meaningful. Prior to his arrival, some of the district's technology "had become dust collectors," Parks said.

"Teachers need an understanding of how technology impacts the learning process to the extent that they will shy away from traditional methods," he said.

Because of the virtual field trips, for example, students have learned to tell engaging stories. They have also learned the technical skills needed for shooting and editing video along the way. Samantha Hill, a sophomore, has produced her own virtual field trips. She says that has absolutely expanded her horizons.

"When I came to this class, I had never worked on computers—I knew nothing," she said. "Just because we're small doesn't mean we don't have a lot of opportunities."

Those opportunities created by technology translate into learning, Parks said.

"It truly provides purpose for the three R's," he said. "We believe it does in a very effective way provide purpose for accomplishing the things we have historically struggled to accomplish." ♦