

'Telelearning' makes a lot of sense

by John Creed
Chukchi College

KOTZEBUE — Martha Lee first enrolled in introductory algebra at Chukchi College in 1985.

The 31-year-old mother of four, however, soon realized she wasn't cutting it — at least in mathematics. She plugged on anyway until the end of the semester, and flunked the class.

"I wasn't grasping it the way I should have, and I just kept falling behind," she said.

Lee needed the class as a requirement for her associate's degree, so she took it again the following spring. About a third of the way through, though, the instructor once again introduced the more complicated algebraic equations that had stumped her before.

Since she still wasn't getting it the second time around, Lee dropped the class.

"It was just so hard to visualize what the instructor was saying," she said.

That may be understandable.

Lee lives in Shungnak on the upper Kobuk River. Shungnak lies about 150 air miles east of Kotzebue, from where Chukchi College delivers postsecondary education to nine remote Inupiat Eskimo villages in Northwest Alaska.

Lee never left Shungnak to attend class. She didn't have to. It met four times a week by audioconference. Lee, as well as students in other outlying villages, would call long distance to Kotzebue and be tied together, via a regional bridge, on a single line with the math instructor and his Kotzebue students.

Audioconferencing and other satellite technologies allow Chukchi's campus to extend far beyond its building in Kotzebue. In fact, the

Chukchi "campus" stretches across 36,000 square miles of roadless Arctic wilderness.

That's why Martha Lee in Shungnak said she couldn't "visualize" the instructor's explanation.

Greg Moore, 37, Chukchi's math and science instructor said it was difficult for many students to solve complicated algebraic equations over the phone.

Without the visual support, about 70 percent of village students, which comprise 60 percent of Chukchi's student body, were either dropping out or flunking out of their math classes.

"That's a real tragedy," Moore said. "Mathematics tends to be a gatekeeper for rural students hoping to major in the sciences or technical-related fields. We also know there's a tremendous under-representation in the technical-related fields for Alaska Natives — including business."

Determined to reverse the dropout and flunkout rate in math, Chukchi staffers scoured the Lower 48 in 1985, searching for a reasonably priced solution to what they saw as a monumental roadblock for village students.

They tracked down a school district in rural southern Utah using something called "telelearning" that allowed teachers to reach students on remote ranches and in small communities there. "Teleteachers" at Garfield School District were using computers and television monitors to teach math, science, English and other subjects over land-based telephone lines.

"Their system struck us immediately as something that could work in Northwest Alaska," said Moore, who spearheaded installing the new system amid skeptics' cries that it couldn't be adapted to satellite transmission.

All through fall semester 1986,

Moore struggled with everything from power surges to static electricity to noisy rural telephone circuits to make the system work.

Accommodating the system to rural Alaska meant every signal that left the college had to go up 23,500 miles to one satellite, down to an earth station at Eagle River, up to another satellite, then down to the village.

Nevertheless, by last December, Moore connected Kotzebue and five villages to create Chukchi's fledgling Electronic Chalkboard System.

In spring semester 1987, Martha Lee of Shungnak took one last shot at the same math class.

This time, however, Lee was not limited to just listening to her teacher. She also saw the problems he was putting, on the board.

Using an activated "light pen" instead of chalk, Moore punched in algebraic equations from a keyboard in Kotzebue. The numbers popped up on his monitor and simultaneously appeared on students' monitors in villages across a region roughly the size of the state of Indiana.

"Martha in Shungnak, I'd like you to simplify this equation," Moore said into this headset. Then he released the control to Lee, who worked the problem from her keyboard as Moore and his other far-flung students watched the number change on their individual monitors, too.

"It finally made a lot of sense," said Lee, who began sailing through the thickest of algebraic problems.

Something else happened, too. Instructors using the electronic chalkboard suddenly realized their preparation time increased markedly.

"You can't fake it," said Todd Stubbs, 32, who pioneered telelearning in Utah.

"In the traditional lecture format, instructors can fake their way through class if they're not prepared," said Stubbs, whose copyrighted piece of Apple software, called Teleboard, is what Chukchi uses to drive its electronic chalkboard in the Arctic.

Moore says the system has made a better teacher out of him.

It worked for Lee, too. She not only passed math, but consistently scored the highest marks Chukchi has ever tallied for this course. She got an A.

The new device has its drawbacks, however, not the least of which is operating cost. Alascom charges \$30 an hour for the two long-distance phone lines it takes to operate the system.

For a high school class that's \$240 a class or nearly \$1,200 a week.

Moore defended the costs, saying the project is still applied research, "and the more you use technology, the more likely those costs decrease." For example, he's working on a way for the system to use one phone line instead of two, which would immediately cut transmission costs in half.

Meanwhile, at least one unexpected bonus for cross-cultural communication has emerged with this new technology.

"As white people, we're aggressive by nature," explained Moore.

"My feeling is that the electronic blackboard removes some of the cross-cultural things that get in the way of good communication," he said. "At least some of that is removed by the physical separation from students. It seems the style of teaching and the technology are capturing the students' interest."

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Chukchi College student Martha Lee of Shungnak works algebra problems on the electronic chalkboard. Chukchi College in Kotzebue serves nine remote Inupiat Eskimo villages in Northwest Alaska. photo by John Creed