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Native American Students Discover Science in North Dakota Programs

Scattered across reservations on the wind-swept plains of North Dakota, a network of schools is grooming a new kind of scientist. These young researchers know how to do science with the simplest materials. They are motivated. And they are Native American.

The University of North Dakota heads this effort with a variety of programs--including two funded by the Institute--that encourage Native Americans to pursue careers in medicine and related fields. In the summer of 1996, the university hosted several elementary school teachers from the region. Their goal: to create class lessons that attract Native American students to science. The grade school teachers worked with faculty members from the university and from North Dakota's two-year tribal colleges. After the program ended, teachers conducted their own workshops in the Native American community.

"Native American students from the Four Winds School in Fort Totten, North Dakota, learn how to check blood pressure."

Known as SAGE, the program's initial goal was to help teachers use sophisticated material in new lessons plans. But its focus has shifted toward teachers simply working together, sharing even the most basic materials. "You can learn a lot of science with just a few pots and pans," said Mark Guy, SAGE coordinator and a faculty member in North Dakota's Center for Teaching and Learning.

Lorraine Azure of the Ojibway Indian School--on the Turtle Mountain reservation near the Canadian border--tried out several new experiments during the SAGE session. In one involving condensation, students add ice to water in a coffee can and measure the air temperature. Then they wait to see when dew forms on the side of the can. "We don't talk about where the dew comes from," Azure said. "We just prod and prod the students until they figure it out for themselves. That's what we're trying to do--give them activities where they'll understand something new."

Azure shared what she learned in a workshop for 15 other teachers on her reservation. "Everybody was eager to get new ideas about teaching science," she said. "We all learned from each other."

So far, SAGE has involved more than 50 teachers who serve more than 1,000 students. But this is just the beginning. Guy hopes to create a self-sustaining network of teachers who will keep science education at Native American elementary schools up to date. "Teachers working with teachers, that's the key," he said. "They're the ones who will have to sustain this."

SAGE adds a valuable dimension to the medical school's Indians into Medicine (INMED) program, which has been preparing Native American students for medical school since 1973. Funded by the federal government, INMED provides undergraduates and medical students with scholarships and other support. It also offers a six-week summer program for students in middle and high schools. INMED's roster of graduates includes more than 90 physicians, 50 nurses, and many other health care professionals. In 1994, the Institute awarded the University of North Dakota a \$450,000 grant to help INMED recruit even younger students, in the fourth through sixth grades.

"We're one of the few programs that is so comprehensive," said Eugene DeLorme, who directs the effort. "We start in the fourth grade and follow students all the way through college and beyond." The program is illustrated in coloring books that introduce younger Native American children to the possibility of pursuing medical careers.

Reaching students before they become turned off to science is also the goal behind a second HHMI-funded program at the University of North Dakota. Called "Science in the Circle of Life," it brings 30 middle school students--mostly Native Americans--to campus every summer for a week of science. HHMI funded the program with a \$1.6 million HHMI grant in 1994.

The week-long campers spend all day--and many evenings-- doing science. They first do hands-on activities with faculty members and graduate student volunteers. Then they undertake their own investigations.

Unlike the INMED program, "Science in the Circle of Life" is too new to measure its success. But its organizers are videotaping the activities to determine what works. Students also complete evaluations, and their performance is tracked after the summer ends. "It's what these kids say in six months, or what they're doing in five years, that will be the real measure of what this camp has accomplished," said Mary Beth Kelley Lowe, one of the program's organizers. So far, the reviews have been glowing. "It helped me a lot to think about what fields I might go into," said Melanie Nieuwsma, a 7th grader from a small town near the Standing Rock Indian Reservation, whose independent project involved environmental engineering. "But I had fun doing all of it."