Michael R. Stoklos

The Marvelous Munching Melanoplus

Building Hopper Hotels— A High Energy Experiment for Grade Schoolers

By Debra Woodruff

Michael R. Stoklos

Elizabeth Bernays

If you want strong opinions about the taste of foods, ask grade school children—even if you're talking about the likes and dislikes of the grasshopper.

During the last school year, five different Tucson Unified School District 4th, 5th and 6th grade classes became well-acquainted with the feeding habits of the differential grasshopper—or melanoplus. They took part in hands-on experiments created by Elizabeth Bernays, head of the department of entomology at The University of Arizona.

"Grasshoppers are good subjects for study because they're active, fun and large," Bernays says. "The colonies are easy to keep, and I could figure out an experiment that would definitely work for the children. We wanted to set it up in such a way that kids could ask lots of questions."

Called "The Marvelous Munching Melanoplus," the pilot program involved building "Hopper Hotels" and test chambers in the classroom. Students offered the grasshoppers different kinds of food—purple cabbage, spinach, romaine lettuce and parsley—while carefully observing insect behavior. Later, with a computer analysis of the data they accumulated, students could see graphs and statistical results.

"The program hooked the kids," says Sharyn Chesser, whose combined 5th and 6th grade class at Ft. Lowell Elementary School was one of the pilot groups. "It was highly motivating. The day the grasshoppers arrived in the classroom was like Christmas morning—we immediately got to see them do all kinds of things—mate, feed, and lay eggs. It was a high-energy experiment."

Because of the success of the pilot, the program was

Young Scholars

What Career Choices Really Mean

By Debra Woodruff

Horizons Unlimited

Carin Sunderman wants to be a large animal veterinarian someday. For one week this June, she had the chance to see exactly what that career choice would mean—thanks to the Young Scholars program funded by University of Arizona College of Agriculture Vice-Dean Colin Kaltenbach.

Sunderman sat cross-legged on the hay-strewn concrete outside of a small corral at the UA dairy farm one early morning at the beginning of her week on campus. She peered intently through the slats of a rough wooden fence as Dr. S. Peder Cuneo, the university's clinical large animal veterinarian, rolled a dairy cow, which he had injected with a tranquilizer, on its back. His assistants packed bales of hay around the bulk of the sleeping animal

Earlier in the morning, the cow had been discovered with a teat almost completely torn from its udder. By 7:30 a.m., Cuneo began the delicate process of cutting, repairing and suturing so that the cow eventually could again produce milk. It was careful, time-consuming, bloody work.

"We want to show the students that scientific research is not just for brainiacs."

continued

presented to 17 other interested TUSD teachers during a workshop at the UA. The workshop was funded by the Howard Hughes Medical Institute grant and led by Gail Paulin, a project specialist with the district. She, along with Carol Bender from the UA, was one of the original developers of the project. During the workshop, teachers saw a videotape produced when five students—one from each pilot class—spent a day in Bernays' UA lab seeing university research up close. In the video, Bernays described how she personally became involved with grasshoppers—and the melanoplus project. She talked about the importance of introducing research techniques to young people.

"It's no good being told about science only," she says. "You have to do something you can ask questions about. You have to get results and keep an open mind in order to learn."

TUSD's Paulin agreed with the value of exposure to research.

"We'd like to provide kids with a more realistic picture of what research is, and show them what's going on right here in town," she says. "Liz Bernays was the perfect pilot researcher—she had such enthusiasm. It was exciting to see the non-scientists get some insight into a scientist's personality."

Carol Bender, senior program coordinator for the UA, was first exposed to Bernay's lab when placing undergraduates as research assistants as part of the undergraduate biology research program.

"Her research was visually stimulating and used a minimum of equipment. And I knew a living organism in an elementary classroom is always exciting," Bender says.

Bender approached Paulin and served as a liaison between Bernays and TUSD under the "Science in Action" series. She continues to look for other UA research that can apply to public schools. Sensory perception in earthworms and growing purple bacteria are two ideas currently on the drawing board.

"We're interested in exciting kids about science," Bender says. "Experiments can't be too high-tech—the teachers must be comfortable carrying them out."

Bender said the UA benefits in several ways from being involved with school children. In the long run, more students will be prepared in science and will be motivated to major in a scientific field.

"Also, we need a more educated citizenry in general," Bender says. "We're asked to have opinions of difficult scientific matters and if we don't have a basic understanding, we can't make informed decisions."

The researchers, themselves, benefit, Bender believes. They can understand better how to communicate with lay people. They get a sense of how to explain what they do to the public.

TUSD educators are excited about building a scientific network in the community, Paulin says. "Working with the university researchers facilitates looking at science in a new way."

In the past, some teachers may have gone into elementary education because they wanted to avoid science—and they may still want to avoid teaching about the sciences, Paulin believes. As a result of this lack of emphasis, science isn't presented to the children until it's too late.

"We've waited too long before introducing science as a natural field of study," Paulin says. "We don't teach children that they can resolve their curiosities through the scientific process."

If Bernays' experience with the first group of TUSD educators is any evidence, the Marvelous Munching Melanoplus is the beginning of some exciting science projects for grade school students.

"I will be ever grateful for the good science teachers I had while growing up," Bernays says. "I was equally impressed with the nucleus of dedicated teachers, so strapped for facilities, that made a small input from us go such a long way."

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