Reprinted with permission from the Ottumwa Courier

“SEMI offers fun lessons with high-tech equipment”

OTTUMWA - The tractor trailer parked in Ottumwa High School's front parking lot Tuesday did not look interesting from the outside. Inside, though, about 20 biology students were intently focussed on completing their experiment.

There was no laughter, no chit-chat and no horseplay in the 800-square-foot laboratory. OHS biology students performed actual DNA mapping like that used in crime labs or hospitals.

In about 45 minutes, students and lab teachers had to measure four to five DNA samples into separate tubes, add an enzyme to cut the DNA into fragments, spin each sample in a centrifuge, place the specimens in a water bath to accelerate a reaction and then add dye to be able to gauge whether the sample moved.

At the end of 45 minutes, another OHS biology class was ready to take over the lab and start the process all over again. The first class would get the results of their experiments tomorrow.

Working in the SEMI, the Science Education Mobile Instruction trailer, might be the only chance some of these kids will get in their high school careers to work with such sophisticated gear.

"That's the advantage of this particular vehicle coming in with equipment. Most districts can't afford all this equipment," said Evelyn Wandrey, the SEMI teacher facilitator.

The SEMI is more than 50 feet long, and contains equipment most high school science teachers have used but may not have been able to share with their students.

"We don't have the resources," said OHS science teacher Dan Matheney, who was at the mobile lab with his Biology I class. "It spares our budget."

For example, he said, his students used a pipette, a device that works like an eye dropper, to pick up liquid. But these $200 devices, he said, were not within the district's budget.

"Especially ones that precise," he said.
Each can be set to pick up liquids measured at one millionth of a liter; every table had two of them.

To actually see DNA patterns, scientists must place their samples into a machine that puts about 150 volts of electricity into a few inches of water. That "gel electrophoresis" machine is also very costly, Wandrey said.

More than 300 OHS students will get to work in the lab, one class at a time. Heartland Area Education Agency, which supports Des Moines schools, operates the unit. Wandrey said the unit can only make it to about 30 schools per year.

Janet Paulson, the local project coordinator for Iowa Biodevelopment at Indian Hills, said because Cargill and Indian Hills Community College support the venture financially, Heartland AEA brought SEMI to southeast Iowa.

Wandrey travels with the trailer and meets up with a trained instructor like Paulson locally. Together, they will teach the DNA experiment to 18 separate OHS biology classes over the course of three days. "The opportunity to work with another instructor is cool for students," said Matheney. "We're tying [the experiment] to our study of genetics." Wandrey said students, who each get one visit to the lab, don't mind waiting 24 hours to see the results of their DNA experiment - with one exception.

"The part that bothers them is if they don't get results," she said. "But any scientist will tell you: You don't always get results, but you always learn something."

A SEMI open house for the public is scheduled for 4:30-6:30 p.m. Thursday.

Mark Newman can be reached at 683-5358 or via e-mail at: mgnewman@mchsi.com.