

## Longmont Daily Times

### Child's play?

Coal Ridge students receive lesson in renewable energy

By Paula Aven Gladych

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FIRESTONE— Sixth-graders at Coal Ridge Middle School played with wires, tubes, batteries and electrodes Thursday as they learned about renewable energy.

Science teacher Tara Calloway applied in October to the National Renewable Energy Laboratory in Golden for a grant to bring its Renewable Energy and Efficiency Education on Wheels program to the school.

Founded in February 2004, the program aims to help students see the importance of math, science and technology education in their day-to-day lives.

On Thursday, NREL instructor Rick Shin introduced Coal Ridge students to fuel cells by letting them put one together. Pairs of students received two test tubes, one filled with liquid oxygen and the other with liquid hydrogen. After attaching hoses to the test tubes and allowing the two liquids to mix, they then clamped wires from a small battery pack to the apparatus.

“Check it out — we’ve got Bubblicious” and “Look, bubbles” echoed through the room during the chemical reaction between the oxygen and hydrogen.

The result was a chemical reaction that created water, oxygen gas and enough energy to run a small fan.

Alex Steinmetz, 12, was impressed with the fuel cell presentation.

“I think it’s cool. It’s a good way of teaching us stuff,” she said. “It gets boring listening to a teacher talk every day.”

NREL takes the renewable-energy van around the country for presentations to schools. Shin and partner Matt Kuhn worked with more than 200 students Thursday.

“We are hoping they will go home and tell their parents (about renewable energy) and spread the word around,” Shin said.

Grants for the traveling program go to schools that need it most, such as those with low CSAP scores or those with many low-income students, Shin said.

“It’s a way to get them interested in science,” he said.

The van visits two or three schools a month, and “as more people find out about it, we will probably do more,” said Shin, a retired junior high school science teacher.

“This is nice. I like this. I don’t have to worry about grading papers and discipline problems, because a teacher is present,” he said with a laugh.

Calloway appreciated having a grant to pay for the visit. She said it would have cost thousands of dollars for the school to provide students with the high-tech gadgetry that made the experiments possible.

After working inside the school with fuel cells, the students headed outside to the van, which sports solar panels on its sides and wears a wind turbine, like a basketball-sized beanie, to learn about solar energy.

Kuhn wowed the crowd with solar-powered music headsets and small, portable solar panels that can recharge a cell phone or radio.

Four large batteries inside the trailer store energy produced by the solar panels and the wind turbine.

Again, the students got hands-on opportunities, connecting solar panels to things like Christmas lights, a small fan and a buzzer that sounds like a dying cow when activated.

“I think it was really cool we got to experiment with things and touch a lot of things,” 12-year-old Taylor Chesters said.

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Jakob Littlefield, 12, left, and Raymond Cervantes, 13, experiment with hands-on energy kits provided by a National Renewable Energy Laboratory van that visited Coal Ridge Middle School in Firestone on Thursday. Teacher Tara Calloway applied for a grant to get the van, which is made out of renewable resources, to come to the school.

Times-Call/Hunter McRae