

## **Middle-schoolers worked on science during spring break**

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9:07 AM EDT

Published: Wednesday, April 2, 2008

Twenty-six Dublin middle school students spent their spring break ... at school, at least part of their break.

They participated in the science challenge at Karrer Middle School from 9 a.m. to noon March 25 and 26.

The students worked in small groups on projects such as how many nails can be balanced on the head of another nail, which exposed them to the concepts of center of balance and center of mass, or constructing paper airplanes, which addressed the four principles of flight.

"We're trying to give them something different but connect it to every-day uses and the science behind it," said Bob Cline, one of the Karrer science teachers who organized the challenge.

Cline and fellow teacher Christian Miller explained the projects to students and offered occasional hints, but mostly left them to explore on their own.

"They're designing their experiment and following it through, said Cline. "It's different than being in the everyday classroom."

The challenge frees students from the time constraints of the school day, allows them to explore concepts that are not in their course of study, and encourages learning by doing, he said.

It also allowed students to work with members of other grade-levels from other schools who have similar interests, Miller said.

The groups competed against each other, but the students seemed to enjoy simply experimenting on their own with such interesting challenges as: create the largest bubble out of dish soap and water.

"We have a lot of students who just really enjoy school, and this gives them another opportunity to have fun with it," Miller said.

This is the first year the science challenge has been offered. Any Dublin middle school student could sign up for the challenge, which cost participants \$40.

Students participated in the challenge for different reasons.

"It just sounded fun," said Sells seventh-grader Sara Arbogast.

"My parent told me that I should, but I only did it because he did," said Karrer seventh-grader Ben Gilton, as he gestured at Ian Gerace.

Ian, also a seventh-grader at Karrer, said, "I came because I thought it might be fun -- and it is."

Meanwhile, the students were occupied with their soap bubble lesson on surface tension. Ian and Ben tried to get their water-to-soap ratio down, while Sara and her group breathed bubbles into existence in their hands.

"I started doing this in third grade," said Sara's partner Vaasavi Unnava, also a seventh-grader at Sells.

She coated her hands in the very soapy mixture, then slowly blew through a circle made by her thumb and forefinger. The bubbles

grew large enough that she had to support them in her other hand.

Miller said he had never seen that technique before.

Vaasavi clearly enjoyed the bubble challenge, but she thought the other projects were fun, too. "It was different from the normal things we've done in school," she said.

When the students cleaned up after their bubble experiments, they were scheduled to complete their final challenge: learn about the chemistry of ice cream.

Cline and Miller said they plan to offer similar opportunities during summer vacation, including an expanded version of the science challenge and two sessions on flight.