

## The Record

Print | Close

# Training tomorrow's engineers

Monday, December 31, 2007

By **STEPHANIE AKIN**  
STAFF WRITER

SADDLE BROOK -- Kim McAvoy's third-grade class is learning some new vocabulary words this year, including "hand pollinator," "integrated pest management," and "agricultural engineer."

Some of those words are hard for 8- and 9-year-olds, but the school district is betting that the concepts are just right for them.

The Smith School third-grade class just completed a unit on agricultural engineering, part of the district's new Engineering is Elementary program.

The idea is to introduce children to engineering and technology as they study the more traditional life sciences -- a concept that is quickly gaining popularity across the nation.

Educators hope these programs, which feature a lot of games and experiments, will motivate students to learn math and science by showing them how the skills can apply to their lives.

Ultimately, such programs aim to boost the number of American secondary school graduates who pursue careers in engineering and technology, fields that should see significant growth in the next decade, according to the U.S. Department of Labor.

Franklin School Principal Salvatore Cusmano said he was persuaded to bring the program to Saddle Brook at a recent seminar. Speakers there said traditional science courses are based on curriculums designed more than 100 years ago, when the American economy was more agricultural.

Today, he said, much of what Americans use is man-made, yet school science programs haven't changed to reflect that, leaving students at a competitive disadvantage with many of their international peers.

Teaching engineering and technology also could help the school district keep up with trendsetters in this country. At least one state has formal requirements for students to learn engineering and technology. In Massachusetts, starting with the class of 2010, students can elect engineering as the topic of the science test required to graduate. In New Jersey, Stevens Institute of Technology in Hoboken has partnered with the state, the National Science Foundation and Verizon Communications to train K-12 teachers to teach engineering.

That program introduced 20 New Jersey schools to Engineering is Elementary, which was designed by the Boston Museum of Science as part of a national pilot study in 2006-07. Saddle Brook is one of the first districts nationally to adopt the program as a regular part of its curriculum.

In Saddle Brook, students in Grades 3 through 5 are learning how engineers help crops grow, clean water, harness wind energy and design bridges.

Every unit introduces students to a fictional child who is having a problem, then asks them to replicate the dilemma with a classroom experiment.

Students in different grade levels read along as a Danish boy named Leif learns to build a windmill to save



DON SMITH / THE RECORD

▲ Saddle Brook third-graders Christina Colombo and Josie Curry working on a project about pollination.

some fish in his friend's pond, an Indian girl named Salila learns to clean pollution from water near her house to save a turtle and a boy named Javier learns to build a safe bridge to his backyard fort, persuading his mother not to tear down the fort. Then the students use inexpensive materials such as note cards and pieces of cloth to design their own windmills, water purifying systems and bridges.

Just before winter break, McAvoy's class read a story about a Dominican girl named Mariana who is trying to get a Hawaiian plant to produce berries in her back yard. The problem, the children discover, is that the plant is removed from its natural habitat, and Dominican bugs don't want to pollinate it. Mariana has to build her own device to carry pollen between the male and female parts of the plant.

When the students finished the story, McAvoy challenged them to build their own hand pollinator out of materials such as a strip of tape, a fabric pompom and a marble. The students learned that the porous surface of the pompom worked best to transfer corn starch -- their pollen-substitute -- because it could pick up more powder and they could control where they dropped it with a tap of their fingers.

The students also were encouraged to brainstorm and reject other materials -- Christina Colombo suggested your nose, Liam Allen a small vacuum and Aya Krayam a pair of scissors or maybe a worm.

The experiment, McAvoy said, gives students a glimpse into one thing an agricultural engineer does, hopefully opening their minds to a potential career.

E-mail: [akin@northjersey.com](mailto:akin@northjersey.com)

**Copyright © 2008 North Jersey Media Group Inc.**  
Copyright Infringement Notice User Agreement & Privacy Policy

[Print](#) | [Close](#)