

Fun lessons teach science by design



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On Friday morning at Sunnyside Middle School, teacher Lisa Hobbs' sixth-grade students were eager to prove which of the roller coasters they'd constructed out of foam tubing and duct tape worked best.

They jostled about excitedly, making last-minute changes to their models before dropping marbles down the track and putting the coasters through the final test.

The class is one of several pilot groups for SLED -- Science Learning through Engineering Design -- a Purdue University-based project aimed at teaching science, technology, engineering and math principals through design-based projects.

And within the next five years, if all goes according to plan, it won't just be Hobbs' class getting in on the action.

The project is a partnership between the Purdue colleges of Education, Engineering, Science and Technology, the Discovery Learning Center, local industries and the Lafayette, Tippecanoe, Taylor Community

and Plymouth school corporations.

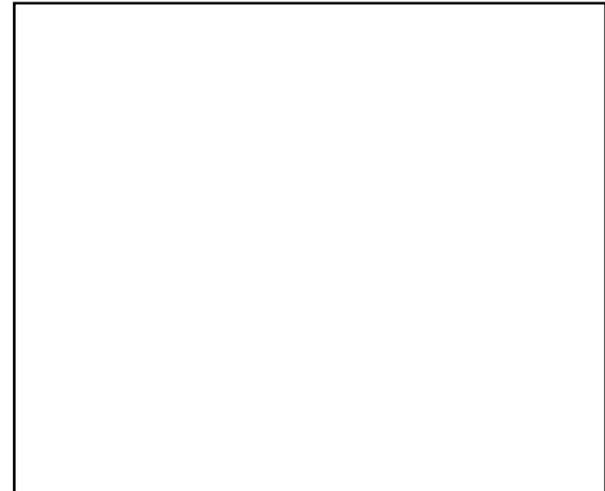
Funded through a \$6.7 million grant from the National Science Foundation, the project targets only grades five and six in the pilot stage. But by the fifth year the project will have widened to incorporate grades three through six.

"It's been wonderful, a great experience," Hobbs said as she surveyed the roller coasters her students had begun sketching on paper the day before. "I think today they can actually see why they did what they did yesterday. It's all coming together."

Lafayette Christian School also was a pilot school this year. It was a key piece in the project since the private school is not one of the four partner districts and therefore gave researchers a control group to work with, said project researcher Todd Kelley, a Purdue assistant professor in the department of industrial technology.

For their project, sixth-graders at Lafayette

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Christian worked with compost, creating containers using 2-liter plastic bottles and filling them with compostable material and red worms. Each group had two containers -- one with a chemical activator to speed up decomposition and one without.

"It did smell good in the beginning, but now it smells terrible," Riley Burgess said after he took a whiff of his project.

Meanwhile, fifth-graders studied heat transference and insulation by designing prototypes of mittens.

"The best part was putting a little pocket in it so dog treats could fit in it," Shelby Temple said.

In each project, students were given a design brief explaining the client's need. For example, the compost program was aimed at finding ways to enrich soil in Haiti.

"This is not a typical design base project where you come out with a clean product," Kelley said. "They walk away from this with a process. We're using design as a way to teach STEM. This is science and math in action."

Project leaders will take what was learned from these pilot groups and share it with about 50 teachers from participating districts who will attend a two-week workshop this summer at Purdue.

The workshop will include a tour of places such as the Subaru auto plant, where teachers will see real world application of

the design concepts they'll be teaching.

"The teachers will get a big picture context of what is STEM in the real world." Kelley said.

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