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**The Herald Bulletin**

## Pendleton classroom goes off grid

By Dave Stafford The Herald Bulletin

PENDLETON — The lights were low in Friday’s introductory physics classes, whether the students chose to watch the Batman movie “The Dark Knight,” head to the gym for some glow-in-the-dark kickball, or try their hands at strobe-light pingpong.

Teacher Aaron Debbink’s classroom at Pendleton Heights High School went off the grid for a day. But that didn’t mean there was no electricity. There was pedal power.



Debbink and another teacher weeks ago rigged a stationary bike to a power generator. As students pedaled, their energy was converted into electricity that was stored in a car battery.

“We had students coming in for the last two weeks before and after school to power the generator” by riding the bike, Debbink said.

“It’s pretty hard,” junior Cameron Mandrell said as he rode the bike to demonstrate how pedal power becomes electricity. “The more you do it, the harder it gets.”

Each of the three introductory physics classes voted for the activity to which they wanted their stored energy applied. Students then had to calculate how much energy it would take to do what they wanted.

The class that chose to watch “The Dark Knight” needed to ride the bike for 72 minutes in order to power the television and DVD player. That’s a little less than the film’s running time. Had they chosen to watch it on an overhead projector, Debbink said the

bike ride would have been about seven times as long.

“By choosing something that’s more efficient, you can still watch a movie. You just use less power,” said Debbink.

“It definitely gives you respect for how much work goes in when you plug in your cell phone or your laptop,” said junior Russell Kischuk. “It’s probably one of the funnest projects I’ve done in school.”

Junior Brian Fulciniti said the exercise gave students an understanding of how much energy is consumed by different devices and how students can conserve. “I’ve been unplugging my phone charger, my laptop charger,” he said.

Jun Jang, a student teacher in Debbink’s classroom from Anderson University, said the demonstration had been enlightening for students. “Electricity to them was something you just plugged in the wall,” he said. “In order to get electricity you have to do work.”

Debbink has developed another illumination hands-on demonstration. A box is wired with three compact fluorescent light bulbs and one standard incandescent bulb.

One or two of the more efficient fluorescent bulbs are powered with a fairly easy pedal. When a third such bulb is turned on, the bike becomes harder to pedal. Yet it takes roughly the same amount of energy to power a single incandescent bulb.

“We’re trying to make things we teach in the classroom relatable to students,” Debbink said. “Why would I want to know that?”

Debbink developed the novel class project as a summer project last year through assistance from the Knowles Science Teaching Foundation, a nonprofit group that rewards teachers with fellowships in a competitive process. Debbink is one of 136 current Knowles Fellows teaching in American classrooms.

“It means everything as a beginning teacher to have support financially and educationally,” he said of the fellowship. “Their hope is that we will become leaders in education.”

Debbink will study this summer to learn about leading workshops for teachers to show them how they can incorporate such novel lessons in their classes. The fellowship makes it possible.

“I wish every teacher could have this,” he said.

What’s a Knowles

Foundation Fellow?

Who: Pendleton Heights High School physics teacher Aaron Debbink is one of 136 teachers competitively selected for a five-year fellowship by the Knowles Foundation. Next year will be his final year in the program.

What: The Knowles Science Teaching Foundation was created by Janet H. and C. Harry Knowles in 1999. C. Harry Knowles was the inventor of the bar-code scanner.

How: Fellows receive financial, educational and classroom support to further their ability as educational leaders. Over the course of a fellowship, Knowles may invest as much as \$150,000 in teachers.

Why: To cultivate and support exemplary science and mathematics high school teachers and develop the next generation of leaders in education. The fellowship also helps retain quality educators in fields where many leave the profession after only a few years.

Source: The Knowles Science Teaching Foundation, [www.kstf.org](http://www.kstf.org).

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