

Innovative Uses of Technology Tips:

[Earth Science](#), [Engineering](#), [Environmental](#)

[Measuring Motor Speed](#)

Brian Lamore, physics teacher at the Chinquapin School, Highlands, Texas, has his students build a “Beakman’s” Motor to study electromagnetic induction. This simple motor can be built in a single class period and the activity is always a favorite of his students. But nothing makes an activity more interesting than a little competition, so Brian challenges his students to build the motor that will spin the fastest.

[Activities for Vernier Solar Power](#)

From the Vernier solar dashboard, you can see a live camera view of the roof solar panels, our weather station data, and a live display of the power production of the panels. There are also tables and graphs you can use to investigate the energy production of the panels over time. It is our hope that you will be able to use this information to facilitate the study of solar energy production with your students.

[Physics](#), [Engineering](#)

[How Do You Dim an LED?](#)

Have you ever seen an LED-based headlamp that has selectable brightness? Sometimes the brightness change is from turning on more or fewer LEDs, but sometimes the individual LEDs seem to change brightness. How does this work? Usually when you reduce the voltage across an LED, it just goes out. We looked into this question using a Vernier Light Sensor and a LabQuest.

[Hot House](#)

Clarence Bakken, a retired physics teacher from California, explored insulating capabilities of different wall materials. Clarence used an Infrared Thermometer to study the rate at which heat is transferred through the walls in a model house.

[Speed of Sound in a Snap](#)

One of the experiments in our physics lab manuals has students determine the speed of sound in air by creating a short sound in a column of air, such as a hollow tube. A Vernier Microphone is used to pick up the initial sound and the echo of the sound from the end of the tube.

[Innovative Uses, Biology](#)

[Capturing Monarch Metamorphosis in Logger Pro](#)

Ben Carter, a 12-year-old from Nashville, TN, captured a beautiful time-lapse video of a monarch caterpillar pupating into a chrysalis using Logger *Pro* and a ProScope HR camera.

[Spectral Analysis of Fireflies](#)

10 year-old Ben Carter of Nashville, Tennessee, was curious about the light given off by a firefly. Ben has inherited his natural curiosity and love of science from his father, Vernier consultant David Carter. Ben borrowed his dad's Vernier Spectrometer and used it to capture the emission spectra of the fireflies.

[Innovative Uses, Chemistry](#)

[Spectrophotometric Analysis of the Metals in a U.S. Five-Cent Coin](#)

Vernier consultant, Walter Rohr, came across an article published in the February 1989 *Journal of Chem Ed* that described a method of resolving mixtures with overlapping spectra without determining molar absorptivities or complicated mathematics. The method developed by Blanco called Multi-Wavelength Linear Regression Analysis, or MLRA, allows the composition of a binary mixture with overlapping spectra to be resolved with only three measurements—the absorbance of a standard solution for each component, and the unknown mixture itself.

[Creating a Topographic Map with Motion Detectors](#)

Brillion Middle School teachers Ryan Peterson and Matt Van Thiel have their 8th grade Earth Science students do a fun and engaging activity on topographic mapping. The activity is based on the Earth Science with Vernier activity "Ocean Floor Mapping." Using plastic utility tarps, they create a simulated lake in their classroom.

[Creative Classroom Solutions](#)

Peter O'Connor, a teacher from Boonsboro High School in Maryland, described a situation facing many teachers—lots of students and only a few computers." Having used Logger Pro for many years dating back to the ULI days, my school has been happy using it in our labs. However, as class size increased, we have had issues with maintaining a small lab group size for each lab. This is a large issue when it comes to doing Vernier labs with computers."

[Innovative Uses](#)

[Get Ready for the Ring](#)

Nick La Rosa, a Level 2 boxing coach from Victoria, Australia, found he could use Vernier data-collection technology to improve the performance of his boxers. Nick has developed various tests to help him evaluate fitness levels of the boxers, as well as effectiveness of the training program.

[What To Do With Old CBLs?](#)

Nüsret Hisim (Walkersville HS, Walkersville, MD) was in the same situation as many other customers: He long ago updated his interfaces to newer LabPros or CBL 2s. There are some creative ways he makes use of those older, original CBLs, on the Vernier link below.

Links that may be helpful with innovative uses of technology are:

<http://www.vernier.com/news/category/innovative-uses/>

<http://www.vernier.com/grants/nsta.html>

