

WebSights features announcements and reviews of select sites of interest to physics teachers. All sites are copyrighted by their authors. This column is available as a web page at [PhysicsEd.BuffaloState.Edu/pubs/WebSights/](http://PhysicsEd.BuffaloState.Edu/pubs/WebSights/). If you have successfully used a physics website that you feel is outstanding and appropriate for WebSights, please email me the URL and describe how you use it to teach or learn physics—[macisadl@buffalostate.edu](mailto:macisadl@buffalostate.edu).

### Get your summer physics professional development plans under way

The PhysTEC project has assembled what hopefully will become the go-to clearinghouse for physics teacher professional development opportunities at [www.ptec.org/pd/](http://www.ptec.org/pd/). The critically acclaimed *Modeling Physics* summer workshops offered nationwide [modeling.asu.edu/MW\\_nation.html](http://modeling.asu.edu/MW_nation.html) are listed there, as are AAPT/PTRA workshops, QuarkNet sites and Research Experience for Teachers (RET) opportunities. And for an unparalleled professional development activity, consider attending the AAPT Summer Meeting, July 30–Aug. 3 in Omaha, NE ([aapt.org](http://aapt.org)).

### Veritasium Science Videos by Derek Muller, [veritasium.com](http://veritasium.com)

Muller is a 2008 PhD graduate of the school of physics at the University of Sydney, Australia, whose dissertation on the “Effective Use of Multimedia In Physics Education” developed into several peer-reviewed publications and presentations, including a presentation at an AAPT national meeting and a publication in *Science Education*, amongst others. A link to Muller’s full dissertation and a synopsis of his research can be found on Frank Noschese’s “Action-Reaction” physics blog in a series of posts dedicated to pseudoteaching, [fnoschese.wordpress.com/2011/03/15/what-puts-the-pseudo-in-pseudoteaching/](http://fnoschese.wordpress.com/2011/03/15/what-puts-the-pseudo-in-pseudoteaching/). Muller’s veritasium videos are powerful reminders of the need for genuine student struggle, engagement, and discourse to achieve growth in conceptual understanding of physics, of the remarkable lack of effectiveness of clear exposition and memorization (a.k.a. *pseudoteaching*) in promoting sophisticated conceptual change, whether in person or via multimedia, and the inability of most people to critically monitor and assess their own learning. As well as being quite informative and insightful, Muller’s videos are a lot of fun to watch. His dissertation is good reading too.

Brought to my attention on the Modeling-L list and via the “Action-Reaction” [fnoschese.wordpress.com](http://fnoschese.wordpress.com) and “dotphysics” [www.wired.com/wiredscience/dotphysics](http://www.wired.com/wiredscience/dotphysics) physics blogs.

### c21: Introducing real-world 21st-century examples in high school and undergraduate physics curricula, [c21.phas.ubc.ca](http://c21.phas.ubc.ca)

This website claims to discuss why such examples are needed and provides resources (mini-articles, problem sets, multiple-choice questions, lecture notes, take-home experiments, and video) and the design rationale behind the resources. I appreciated the several dozen short articles and related

materials upon the physics underlying energy conservation technologies (especially regenerative braking in cars) and the environment, and noted several activities on the physics of biology and medicine, and some on basic skills in introductory physics. Falling cats (air resistance), lots of auto examples and analysis, climate modeling, wind turbines, home electrical safety, vision and diffraction, nerve impulses and reaction time, home heating, the bicycle, and cheetah chasing (kinematics) were all enjoyable examples as well.

Submitted by Georg Rieger of c21 at University of British Columbia physics

### Cheap wave machines from tape, bamboo skewers and Jelly Babies (a.k.a. gummi bears)

[nationalstemcentre.org.uk/elibrary/resource/2096/wave-machine](http://nationalstemcentre.org.uk/elibrary/resource/2096/wave-machine)

This video and page by Alom Shaha of the UK National STEM Centre and the Institute of Physics (IoP) shows a quite fun and entertaining classroom project; and these [Shive] wave machines are commercially priced at about \$600, so they’re quite rare in high school classrooms.

Frank Noschese posted some related inquiry questions on the Modeling-L listserv. What happens if:

- the skewers are closer together?
- you add more gummi bears to the skewers?
- you have 1/2 machine with one bear, other 1/2 with two bears?
- you have 1/2 machine with close skewers, other half with far apart skewers?
- can you get a two-bear machine to travel the same speed as a one-bear machine?

Submitted to the Modeling-L list by Frank Noschese of John Jay High School Physics (Cross River, NY), further discussed on the (NY) OPHUN-L listserv with videos posted to YouTube of some classroom made wave machines by Dan Hosey of Pittsford Sutherland HS Physics (Rochester, NY)

### Do it yourself personalized, randomized homework assignments using a spreadsheet. [teachscience.net/2011/02/16/diy-personalized-randomized-assignments](http://teachscience.net/2011/02/16/diy-personalized-randomized-assignments)

Ed Hitchcock, a high school science and physics teacher from Toronto describes how to use a random number generator to produce individual student homework exercises in this nicely illustrated and written short piece. Very useful if you don’t have access to a higher end online homework system. Note his blog contains other physics teaching ideas.

Submitted to the Modeling-L list by Frank Noschese of John Jay High School physics (Cross River NY)