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websights

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/. 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.*

• *Underrepresentation Curriculum Project Revises Their Free Curriculum*

https://underrep.com

The Underrepresentation Curriculum Project (URC) is a flexible curriculum designed to help students critically examine scientific fields and take action for equity, inclusion, and justice. The project has a new website with revised lesson plans, which are NGSS-aligned and CC-licensed, as well as new resource and facilitation guides. For example, we rewrote a single lesson in the third unit ("Ignition") into three new activities with action projects that are more focused, better supported, and more organized. These materials are free and are a terrific way for instructors to talk about equity and social justice with their classes. Check out the links, resources, etc. the whole way through. *Submitted by Chris Gosling*

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• *OAPT Newsletter Review of Phyphox*

by Robert Prior, ePublisher of Ontario Association of Physics Teachers

http://newsletter.oapt.ca/files/REVIEW-Phyphox.html
http://newsletter.oapt.ca
https://phyphox.org/
https://tinyurl.com/WS-PhyPhoxChall

The Ontario section of our association boasts a truly excellent newsletter, which I periodically cite, and Prior's review is one of the reasons why. Prior runs through and annotates phyphox website activities for North American teachers. Phyphox is a free smartphone app (available for both Android and iPhone) designed by a team of physics pedagogues at RWTH Aachen University in Germany. That team includes Profs. Heinke and Stampfer, and Dr. Sebastian Staacks (who answers the email), and their app allows student friendly access to the smartphone transducers—speakers, microphones, accelerometers, GPS location, thermometers, and (if present) magnetometers, barometers, light, and other proximity sensors for physics experiments. Phyphox hosts a significant collection of physics experimental activities online, with helpful videos and tools for developing your own activities. The phyphox team has justly received multiple awards and with the pandemic, interest in their package of software and curricula has exploded. The software seems very friendly and extraordinarily well suited to student project-based learning. Unfortunately, due to the lack of appropriate cell phone sensors it's not a simple replacement for measuring things like position and velocity (acceleration is fine) vs. time or electric field or current or voltage. These latter measurements currently (and justifiably) constitute the standard canon of laboratory activity used in standard introductory physics courses in North America.

However, phyphox has some very nice built-in tools like an audio-triggered stopwatch and supports readily shared data. There are some limited curricular materials (mostly German language worksheets) but Staacks developed a set of ***10 at-home challenge activities*** with accompanying YouTube videos that Prior annotates in his review. I particularly enjoyed the salad spinner and marble bounce phyphox activities and found them somewhat useful for my classes, as well as the free fall activity—for which you need to warn your students to drop phones only over a bed for smartphone safety. It'd be nice to see more activity curricula developed for, say, modeling physics in the U.S., but the lack of the appropriate cell phone sensors is a real problem.

Kudos to both the phyphox team and to Mr. Prior

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• *"Physics of Atomic Nuclei: Classroom Activities and Knowledge for Educators (PAN-CAKE)"*

jinaweb.org/educational-outreach/pan-cake-masterclass-educators
by the Joint Institute for Nuclear Astrophysics – Center for the Evolution of the Elements (JINA-CEE)
https://frib.msu.edu/
https://tinyurl.com/WS-PCposter

"PAN-CAKE is a free online (Zoom outreach) masterclass for teachers scheduled on **March 13 & 14, 12:30-4:00 p.m. ET**. Science teachers (from preservice to veterans) in the U.S. and Canada will learn about world-class scientific research in nuclear astrophysics at MSU's Facility for Rare Isotope Beams. This is an opportunity to meet scientists and other educators, take a 'virtual tour' of a leading rare isotope laboratory, collect tools and demos for your curriculum, and discover the future of research. Space is limited, apply online and share the PAN-CAKE poster."

From the web, as pointed out by Michael Magnuson of Canisius HS Physics

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• *Update on the Physics of Mechanical Stability in Pop Culture: Dancing Robots – "Do You Love Me?" by Boston Robotics; Various Tensegrity Tables*

https://tinyurl.com/WS-RobotDance
https://youtube.com/user/steventhebrave
https://en.wikipedia.org/wiki/Tensegrity
https://tinyurl.com/WS-tensegritytable

Apropos of the physics of stability, dancing robots to cheer you up in the bleak winter. Skynet's rule shall be ruthlessly cute, musical, and actively stable. Steve Mould's latest YouTube videos construct 3D and simplified 2D models of **Tensegrity** tables and siphons for simplified and less optically distracting visualizations of these complex devices. Also a full-sized Tensegrity table YouTube video build (highlight about 13:30) for your students to analyze via extended free-body diagrams. I'm hoping to see whole buildings of steel cable and glass (to look at, not enter, mind you).

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