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Welcome Back: Fall Classroom Physics Resources

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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

► COVID Hasn't Finished with Us Yet; Also, University of Toronto's "Physics in the Time of COVID-19"

<https://tinyurl.com/WS-scrappyfilter>
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At the time of this writing, many are predicting a new fall wave of COVID, and the most helpful thing I have found for taking action in my classroom (after vaccinations and masking) has been to build my classroom scrappy filter. This is a good physics conversation starter as well as a psychological empowerment exercise for physics faculty.

Physics students at the University of Toronto prepared a newsletter/report, "Physics in the Time of COVID-19: An Inside Look into How U of T's Physics Community Has Fared During the Pandemic." The report discusses social impacts, accessibility, physics education, physics research, funding, and some physics applications in fighting the pandemic from the University of Toronto.

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► Welcome Back: Fall Classroom Physics Resources

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Some excellent classroom physics teaching resources from some outstanding physics teachers who are active online. First, Frank Noschese, AAPT Fellow, is super active and current on Twitter, and retweets and directs to the Twitter physics teaching community. Following Frank is a great way to pick up lots of cool physics teaching insights, delivered to you regularly. I recently enjoyed his thread on ending an introductory circuits unit with a paper circuit project inspired by "Servos with a Cause," making use of a conductive fabric

maker tape that can also be used to lay out conductive electrodes on conductive paper for the famous E field mapping activities. Follow Frank today if you are looking for online inspiration. Frank also recently cited an Inertia Shuffleboard game from Bruce Yeany's "Homemade Science" YouTube channel.

Next, Prof. Rhett Allain continues to post physics lessons and cultural material. Most recently, his work includes extended lecture/presentation material dedicated to algebra- and calculus-based first-year college, university, and AP instruction showing problem-solving techniques (running through standard topics) accompanied by the use of introductory numerical solutions in Python on Trinket (an in-browser graphical coding package). He manages several YouTube channels, including one called "Physics Explained" devoted to academic classroom physics and a "cool" popular physics culture channel dedicated to his MacGyver and MythBusters consulting, his Wired column, and nifty physics demonstrations, tricks, etc. There's a lot of fun physics there. Rhett is also very active on Twitter.

Helen Reynolds is a Tucson physics teacher who curates a rich set of annotated URLs in Google spreadsheets she calls GIFT—Good Ideas For Teaching physics (toys, tricks, labs, etc.) and GLASS—Games (online) Labs And Simulations Spreadsheet (with 2nd sheet of video clips). Ms. Reynolds also maintains an active Twitter presence.

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► Developing an Intuition for e : Euler's Number

<https://en.wikipedia.org/wiki/3Blue1Brown>
<https://tinyurl.com/WS-eeeyepi>
<https://tinyurl.com/ES-EulerSpecial>
<https://tinyurl.com/WS-lockdown-e>

Grant Sanderson's excellent 3Blue1Brown animated math channel has three nice videos developing intuition about e : first, " $e^{i\pi}$ in 3.14 minutes, using dynamics" (position and velocity). Then, "What's so special about Euler's number e ?" is another short video, then finally a full-lecture-length "Lockdown Math: What is Euler's formula actually saying?" Bravo, Grant!

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