***Dan MacIsaac,* Column Editor,** Physics Department, SUNY-Buffalo State College, Buffalo, NY 14222; macisadl@buffalostate.edu

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.*

• *Flipgrid.com – An easy-to-use free classroom student video site (website and smartphone app)*

Flipgrid.com
tinyurl.com/WS-flipgridPM

Flipgrid is a free (for educational use; registration is required) platform for students to make video responses to instructor queries. Teachers create "grids" (basically an online class group) and post "topics" to the "grid." Each "topic" is a prompt soliciting a student video response. There's a searchable "disco library" of "topics" written by teachers. The library includes a few (though not many) examples from HS and college intro physics. E.g., Valerie Conti's "Projectile Motion" shows how Flipgrid could be used for formative assessment—students view a YouTube video ("Dunking Devils Trampoline") and read a short article from physicsclassroom.com, and then make a video response to four questions. Students can add text, subtitles, and drawings to their videos in the smartphone (both Apple and Android) app.

So far, I've only posted a single "topic"—a 0:30 s "introduce yourself to the class in a short video" topic to help me learn my students' names. Students seemed to find the platform easy to use with their smartphones—two students incorporated both text and drawing in their video, though neither had used Flipgrid before.

Suggested and submitted by Dr. David Abbott of Buffalo State Physics

DOI: 10.1119/1.5145485

• *New NAS publications on K-12 Engineering Education; Teacher Professional Development*

– K-12 Teachers of Engineering in U.S. Lack Needed Preparation and Support from Education:

Building Capacity for Teaching Engineering in K-12 Education (2020)

tinyurl.com/WS-NASk12engg

A new National Academies report discusses preparation of K-12 teachers for promoting learning of engineering, with 10 specific recommendations. Includes a section on recruiting underrepresented populations into engineering and the teaching of engineering. The report is particularly useful to policy and grant planning.

– Changing Expectations for the K-12 Teacher Workforce: Policies, Preservice Education, Professional Development, and the Workplace

www.nap.edu/catalog/25603/

A policy report on how teacher education and professional development needs to change to address the expectations raised by changing learning standards and rapidly diversifying student populations, particularly STEM students.

DOI: 10.1119/1.5145486

• *Adapting simple mechanics numeric computer modeling to epidemics like coronavirus*

rhettallain_gmail_com.trinket.io/
tinyurl.com/WS-epidemic1
tinyurl.com/WS-epidemic2
www.ncbi.nlm.nih.gov/pmc/articles/PMC2717691/
cdc.gov/coronavirus/2019-ncov/index.html

For many years now, introductory mechanics instructional practice has included having students develop simple mechanics models, usually starting with kinematics. Students use a spreadsheet or simple computer program to establish initial ($t_0 = 0$) position, velocity, and acceleration of an object, then use the kinematics equations to calculate a change in position and velocity a short time interval later ($t_1 = t_0 + \Delta t$), add in the changes ($x_1 = x_0 + \Delta x$, etc.), and repeat the process. Usually results are graphed and shown in a table and interpreted, then friction, time varying, and velocity dependent forces added in, time step interval shortened, and so forth to explore model limits, further develop the model, etc. This modeling mechanics approach is richly established, well documented, and shown in some computer workshop at most every AAPT national meeting.

However, these same skills can be applied to epidemics—like the currently developing COVID-19 / coronavirus situation, or many other contagions. Model parameters exist for outbreaks of measles, SARS, MERS, Ebola, Swine Flu, 1918 Spanish Influenza, etc. The simplest common model is known as SIR (for Susceptible, Infected and Recovering people—the variables replacing x and v) and is built with typical timesteps of one day, and you can plug in recovery time for your select contagion. You can then explore the effect of modifying a transmission coefficient while running your model over a theoretical numeric population of 1 million people, etc. YouTube videos demonstrate the basic model relationship equations, and as well as running your own models over your hapless theoretical population, you can also analytically explore the effects of reducing the susceptible population (through vaccination), or slowing the transmission via changing behaviors—such as hygiene, quarantine, and related policies. Those circumstances leading to self-extinguishing contagions, where the contagion can't take hold in the population due to unlikely (low) transmission and fast recovery, or how herd immunity works (and when it fails) can be explored. The SIR model excludes births and deaths, though can readily be extended for such.

Who thought freshman kinematics computer modeling methods could lead to understanding why mandatory paid sick leave for service workers makes sense? Powerful insight emerges from reflecting on simple models.

DOI: 10.1119/1.5145487