

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/](https://www.physics-ed.com/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.

• **A Christmas-themed online December video physics experiment competition**

“Physics in Advent / Physik im Advent (PiA)” or “24 Daily Experiments Until Christmas”

<https://www.physics-in-advent.org/>

by Prof. Dr. Arnulf Quadt

“PiA – Physik im Advent” is an online advent calendar of physics experiments hosted as a participatory holiday competition. Picture an advent calendar, but instead of candy behind every little door there is some education and fun. From December 1st to 24th, small physical experiments that can be carried out with standard household materials are presented daily as videos by Mr. Santa or Ms. Santa. Participants do the experiments and (if registered) may answer a question on the PiA website. On the following day, there will be a solution video and, if the answer is correct, a point. At Christmas, all registered participants will receive individual certificates. Among the best registered participants, donated prizes will be raffled off in the categories of individual, school class, or school. Prizes include iPods, books, and experimental kits, and also a trip to Dallas to watch NBA basketball games with Dirk Nowitzki. Anyone who registers at [physics-in-advent.org](https://www.physics-in-advent.org/) can participate. Registration is free and opens on Nov. 1, and the PiA competition starts on Dec. 1. Posters and flyers can be requested free of charge via the contact form on the PiA website.

“PiA – Physics in Advent” is intended to awaken in all people the joy of experimenting on one’s own and offer entertainment and learning at the same time. PiA is aimed at children and young people aged between 11 and 18 years, and will take place for the seventh time in 2019. Last year, the project included 40,000 registered participants, 49% of whom were girls, and 1.7 million visitors overall. All parents, teachers, students, or adults interested in physical phenomena are invited to participate. PiA is offered in cooperation with several national and international physical societies and STEM initiatives.

Submitted by Prof. Dr. Arnulf Quadt, Georg-August-Universität of Göttingen

PiA is offered in both English and German, and complete video archives for the previous six years experiments and activities are available at the site. Students, parents, teachers, adults, and groups can all register for PiA, but not all can receive prizes. Interestingly enough, there is also a Swedish physics advent competition (Swedish language only) run by the Vattenhallen Science Center at Lund University, Sweden.

• **Desmos offers online “Test Mode Calculators”**

desmos.com/testing

desmos.com/test-mode

pittsfordschools.org/Page/14427

Desmos software—most famous for their visualization, graphing, and visual problem-solving notebooks freely available to students and educators—are now also offering online testing apps that lock student devices (phones, iPads, and browsers) intending to restrict test cheating behavior (messaging, going elsewhere online, or sharing questions and answers, etc.). Most teachers will look at the online calculators (4 function, scientific, and graphic calculators), which also log total time locked to the calculator site, and customization and advanced testing are also possible. *Submitted by Mike Magnuson, Canisius HS Physics*

Mike also reports a “Desmos Trove” of nice HS Physics teaching examples by Daniel Hosey of Sutherland HS (Pittsford Schools) physics. Bravo, Mr. Hosey.

• **Developing physics student metacognition: Students don’t judge their own learning very well**

arstechnica.com/science/2019/09/college-students-think-they-learn-less-with-an-effective-teaching-method/

pnas.org/content/116/39/19251

youtube.com/user/1veritasium

A recent, widely discussed popular blurb from “Ars Technica” discussed a study of college physics students that again re-confirms the widely known insight that students aren’t very good at monitoring their own learning – “novices in a subject are poor judges of their own competence, and the cognitive fluency of lectures can be misleading.” A recent PNAS article by Deslauriers, McCarty, Miller, Callaghan, and Kestin, “Measuring actual learning versus feeling of learning in response to being actively engaged in the classroom,” examining feeling of learning (FOL) in calculus-based introductory physics students at Harvard concludes that students perceive their own level of cognitive effort negatively; students do not recognize the value of struggle that accompanies effective learning. The authors go on to suggest early interventions with students affirming the value of increased cognitive effort.

I show two Veritasium videos early in physics classes to address this issue—“Khan Academy and the Effectiveness of Science Videos” and “The Science of Thinking.” Learn how to monitor your own effective learning.