

# 6 SMART IDEAS

## BEN GORDON SHARES HALF A DOZEN OF HIS FAVOURITE DIGITAL RESOURCES FOR TEACHING SCIENCE AT KS3...

### 1. CRACKED (CRACKED.COM/HUMOR-SCIENCE.HTML)

One of my favourite things about being a science teacher is the random questions you get asked every day: 'how do whales have sex?', 'who would win in a fight between a crocodile and a shark?' and so on. Whenever I teach I always try to pepper the lesson with relevant and interesting facts. They often generate discussion, as well as fostering curiosity about the topic. The vast majority of the facts I dish out come from this website – it covers a wide range of material and will require a lot of sifting before you find something relevant to the classroom, however, every few days there is an article related to science which is not only amusing and interesting, but provides plenty of fuel for classroom discussions.

### 2. PHET (PHET.COLORADO.EDU)

Physics gets a bad rap among students, in part because of certain concepts that do not always click right away. Many students struggle with the flow of current in series and parallel circuits, or how gravitational potential energy is converted to kinetic when an object falls. The PhET website contains dozens of simulations for a wide range of topics – mostly physics, but some chemistry and biology as well. While some of the simulations are a little obscure, and some downright weird (see John TraVoltage, for example), they are useful as a teaching aid and even better as a supplement or alternative to a practical that allows students to visualise what is going on behind the scenes. I sometimes set the students a list of instructions or questions and get them to go on the website as a homework activity. Faraday's Electromagnetic Lab is a particular favourite.

### 3. THE ELEMENTS – A VISUAL EXPLORATION (TOUCH PRESS, AVAILABLE FROM ITUNES)

Having finished the obligatory 'group 1 elements in water' demonstration, students can find learning about the periodic table a little dry and uninteresting. This app is a touch pricey, at nearly £10, but the ability to bring up high-resolution photos of each element, which you can rotate and zoom with ease, means that it grabs students in ways that no textbook can. The app can be very useful during a demonstration to a small group, but its real power comes when each student has access to an iPad, and they can explore and research for themselves. I often get asked why the symbol for Sodium is Na, and I always tell students to look it up and get back to me – but this way is much more interesting than Google.

### 4. TRACKER (CABRILLO.EDU/~DBROWN/TRACKER)

When I began my teaching career, a really interesting learning experience was



### ABOUT THE AUTHOR



Ben Gordon is a secondary science teacher at Westfield Academy, Watford, who utilises every opportunity to share his love of science with anyone who'll listen, and many who won't. His wife has learned to tune him out and smile encouragingly.

discovering how many students seem to find physics totally irrelevant. The thing that always grabbed me about the subject was just how applicable it seemed to everyday life. The equations of motion are a prime example, and this webpage can help to bridge the gap between the science and the reality. The website is free, if a little intimidating to begin with (there is a paid app with a more intuitive approach called Vernier Video Physics). You upload a video of a moving object, say a falling bun case or a thrown tennis ball, indicate the scale using an object of known length in the video, and the website can calculate and graph the speed and acceleration of your object. It works wonders to bring velocity-time graphs into a more relevant context.

### 5. SCALE OF THE UNIVERSE 2 BY HTWINS (HTWINS.NET/SCALE2)

Big numbers can be very difficult for a student to grasp, and digital resources can help when explanations and comparisons fall short. This is an

online Flash animation that allows you to scroll through a logarithmic scale that compares the size of various objects, from a Planck length and quantum foam, all the way up to the size of the known universe. There are several resources like this on the internet, but none so comprehensive. It has many uses in the classroom, from helping students to see how small an atom is compared to a body cell to how embarrassingly tiny our sun is relative to some other stars.

### 6. VENUS EXPLAINS THE ATOM (TINYURL.COM/TSVENUS)

I could very easily write several articles' worth of material on Youtube videos alone. This video is taken from an American sitcom from the 80s, and shows a radio DJ explaining the structure of an atom to a disenfranchised teenager, using an analogy of rival gangs to describe the nuclear particles. I was initially skeptical of this video, having been introduced by a colleague who said that upon seeing the video, some of her most difficult boys stayed behind for the whole of lunch to do extra chemistry. I was worried my students would find it cheesy, but I've since lost count of the number of times I've used this resource to great effect in both KS3 and 4.

