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A new dimension to Science teaching in the 21st Century

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I can get quite exited when I think about the potential of adding stimulating material to lessons on a spontaneous basis – or even the pre-planned use of magnificent resources available at the touch of a few buttons.

Remembering my early years of teaching – the Banda – wow – you spent an age drawing out a wonderful diagram and it would only print about 30 copies. Then I remember getting a colour TV and video. The first one seemed to break down nearly every time I looked at it, and there wasn’t exactly a good range of programmes to record. The Overhead Projector- I think I was probably the first person to make use of one at my school, and the kids loved it because it was different. I could draw a diagram and then keep it forever – or at least until the syllabus changed and the work became archaic.

But now there is an explosion of information at our fingertips, so many spurs to the imagination to help make good lessons into really wonderful learning experiences.

How can it be used? When teaching about gases, and hydrogen in particular, how about listening to a radio programme made at the time that the Hindenburg Airship was just arriving in America from Germany – the actual original recording (7mins 19 seconds) as it was seen to arrive looking fine, then blew up. www.otr.com

A search site like Google is a godsend when it comes to research. There are times in a school year when I find it necessary to do things a bit differently, and then I introduce the History of Science. Originally it was centred around Sir Isaac Newton. We have a few books in the library, but not enough for a whole class. Putting photocopies of pictures into a presentation doesn’t look great these days, so we go to www.google.com/images and type in Isaac Newton to get a whole collection of pictures and cartoons. We then look for some basic information, when he lived, what science he was famous for, and do a Power Point Presentation. To help teach the pupils what was expected I did my own version, got carried away as I was teaching myself how to use Power Point at the time, and ended up setting the work to 17th century music and showing it in Assembly. Issac Newton.ppt Again, it was the novelty which inspired the pupils, there was a standing ovation – rather unexpected! My own version is now available to use year after year as a starter. We’ve since developed the theme to a whole range of scientists and have introduced new skills to improve their Power Point Presentations. The History of Science PPP History of Science Project was developed, again using the Internet, but is now on the school network, so that pupils can refer to it when developing their own material.

Looking on the Standards Site a few weeks ago I found that the A.S.E. have put useful resources on-line. I shall be using a couple of them this coming school year – spreadsheets on the costs of insulation, linking science with citizenship, and again, some good work on renewable resources again giving a link between Science and Citizenship www.standards.dfes.gov.uk/keystage3/respub/sc_ict
When teaching Astronomy there are two great programmes on Planet 10 found at www.scienceyear.com/wired/index.html The first is travelling through the Solar System, viewing it from different places, the second is about making wise choices about where a planet should be if it is to be people friendly.

When teaching Geology, there is a free on-line resource from the Oxford University. It’s an Interactive Rock Cycle www.oum.ox.ac.uk/children/rocks/cychome/htm or the interactive bits at two levels at www.oum.ox.ac.uk/children/rocks/rocgames/rocgame1/htm

When teaching Photosynthesis, there is a useful website “The Tomato Zone” with simple activity revising aspects of photosynthesis. At www.thetomatozone.co.uk Go to secondary Grow Your Own workshop. The same website has a rather nice, simple activity showing growth of plants in distilled water, complete mineral solution, solution minus nitrogen and solution minus magnesium. Go to secondary Hydroponics workshop.

We network a variety of programmes for the pupils:- Summary sheets set out as Cloze tests, with clues for the missing words; Words and Meanings programmes; reinforcement programmes such as a homemade programme to help learn the names of apparatus Apparatus Interactive.ppt, or to do labelling exercises such as the structure of the leaf Leaf Structure.ppt They can produce their own poster on “Adaptation” by working through a presentation and following instructions. Adaptation.ppt We use a programme of Food Chains, Food Webs and Pyramids of Number as a teaching tool, (home-made with pictures from the Internet – the foxes and rabbits in my garden seem to run away when I get my camera out) The pupils can then use the same resource for revision by looking on the school network. Food chainswebs and Pyramids

When we teach Investigation skills the work can be presented using Power Point, used initially as a teacher-led lesson, then, using the network, pupils can refer to them when working through an Investigation. To teach some skills we use Variables.ppt, then we introduce a neutralisation investigation using Sc1 Chemistry Investigation

Some schools are really organised, and put their work on the Internet. A good source of Power Point Presentations is Great Barr School in Birmingham. www.greatbarr.bham.sch.uk If the presentations aren’t quite perfect for your own pupils, it is easy enough to modify them, but what a useful resource!

At the end of the course there is the dreaded revision for exams. We all have to do it at some time or other, but there are revision aids on-line: www.bbc.co.uk/education/ks3bitesize www.bbc.co.uk/education/gcsebitesize, www.learn.co.uk to name a few. Yes, the pupils should use them at home, but a lesson spent actively directing them to a few sites for some focussed revision can clearly demonstrate their usefulness – then perhaps they will log on at home.

What schools do need to maximise on the tremendous potential is an Internet link in every school laboratory linked to an up to date computer and Interactive White Board, as well as a suite of computers for regular Science use. The future of Science teaching should be phenomenal!