

Background Research

As mathematics teachers, we try to find whatever hooks we can to hang learning upon, from the moment students arrive at our classroom to the moment they leave, and hopefully for some of the time in between. We cut and copy mathematical clips from newspapers, we cover our walls with posters, and we hang quotations from the ceiling. Are there any nooks and crannies left in our classrooms that remain to be mathematised? How about – the desktop background pictures that we use on our computer? From the moment that I switch on my machine to the moment I start using my interactive whiteboard, I can get a maths mini-conversation going through these without any effort at all.

Windows 7 makes this easy – just right-click on the desktop and ‘personalise’. You can then specify a folder, and your screen will cycle around all the pictures that it contains. I tend to choose the fastest possible setting for this, a change of picture once every ten seconds. Now begins the fun part – selecting the mathematical pictures to add to your collection. I could give you the address to my folder of pictures, but that would miss the point - you will already have plenty of maths images on your own computer that you can crop into something fascinating. There is a healthy element of mathematical autobiography about this. And this can of course be a joint enterprise – students can be encouraged to email through their favourite mathematical pictures to add to the folder. I’ve been sent some beautiful things this way, although students do need to accept that ultimate artistic control lies with the teacher.

I have high-speed photography of a bouncing table-tennis ball, a strange picture on a pavement in Madrid that a cylindrical steel post nearby reflects into a normal portrait of Dali. I have a university blackboard covered in mysterious chalk Us and Cs. There are images from the Hadron Collider, while the Hobermann sphere sets off childhood memories. Everyday maths is there; a pile of oranges from the market, and of the Fibonacci sequence as seen in the heart of a daisy. A topological snow sculpture, a crocheted picture of the group E8, a richly patterned quilt – I could go on.

You can include, of course, mathematicians. On my projector Karl Gauss fixes us with his steely gaze every so often. We have Andrew Wiles looking cheery as he announces his proof (before the hard work of fixing it begins). He is often recognised by students who remember the Fermat's Last Theorem programme we watched at the end of term. I also have a picture of Benoit B. Mandelbrot on my cycle, and there is always a gasp as students say how much like me (without a beard) he looks. 'What maths did your uncle do, Jonny?' someone asks, and immediately I have a way into the Mandelbrot Set (which hopefully in ten seconds time will be exactly what we are looking at).

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