Bad Science

By Ben Goldacre
Reviewed by Eleanor Hayes, Editor-in-Chief of *Science in School*

Ben Goldacre, writer, broadcaster and doctor, is on a crusade: a scientific crusade – against pseudoscience.

Why should British teachers stop using the Brain Gym, which refers to itself as an 'educational movement-based model' and is used in thousands of British schools? In *Bad Science*, Ben Goldacre describes the Brain Gym as "a vast empire of pseudoscience" that tells children "that if they wiggle their head up and down it will increase the blood flow to the frontal lobes, thus improving concentration; … that there is no water in processed food; and that holding water on their tongue will hydrate the brain directly through the roof of the mouth". In a sense, he acknowledges, the Brain Gym works: it encourages regular breaks in lessons, light exercise and drinking plenty of water. All good – and effective – activities.

So what's the problem? According to Goldacre, this "transparent, shameful and embarrassing nonsense" poses two problems, which apply to all pseudoscience. First, you can blind people with scientific-sounding language and get them to do something intrinsically sensible, but is it ethical to lie to them to achieve this? Second, by hiding common sense in scientific-sounding hocus pocus, you create a veil of mystery around science, preventing people from thinking for themselves about seemingly scientific claims or using the scientific knowledge they have.

Over the course of his book, Goldacre examines:

- The misleading but accurate claims of the cosmetics industry (read the claims carefully: do they simply – and truthfully – state that one of the ingredients can make your skin look younger, or do they actually claim that the cream contains enough of the ingredient to do this?).
- How we test whether a treatment works (why is the 'evidence' for homeopathy flawed? How can you design a fair test of a treatment?).
- Some fascinating research on the placebo effect, how the results can explain some of the claims of pseudoscience, and how the placebo effect could be used in conventional medicine.

My only criticisms are minor. The book would benefit from a more careful editor, to correct some grammatical errors, improve some clumsy sentences and – more importantly – remove some leaps in logic or missing information. Also, I suspect that many readers will find statements like "you may disagree, and you now have the tools to do so meaningfully" rather patronising.

Notwithstanding, *Bad Science* is a wonderful book and appropriate for a wide audience. Read it – please! Enjoy it, share it with your friends and colleagues and above all, with your students. It's simply written, funny and utterly compelling; I nearly missed a train connection because I was so absorbed in it. This book reminds us what is wonderful about science – science is powerful, it's great fun, and needn't even be difficult.

I'm not a teacher, but I do have some suggestions for how you could use *Bad Science* in school. Give an individual chapter, or part of a chapter, to your students to read: they'll enjoy it (particularly the bit about why teachers shouldn't use the Brain Gym in lessons) and it will encourage them to question the world around them.

Get your students to practice what Ben Goldacre preaches: exposing pseudoscience for what it really is. Why not ask the class to collect pseudoscientific claims (e.g. from newspapers, the Internet, adverts) and discuss them in class? Perhaps you could have regular 'pseudoscience busting' lessons: why is a particular claim misleading? Could there be any truth in it? If so, what could the real explanation be, and how could you set up an experiment to test it? Perhaps your students could even carry out the experiment.

Finally, to read Ben Goldacre's weekly newspaper column, visit the Bad Science website[w1].

Details

Publisher: Fourth Estate
Publication year: 2008
ISBN: 9780007240197

Web reference

w1 – Bad science:
www.badscience.net