

REVIEWS

Renewable energy: power for a sustainable future

Ed. Godfrey Boyle
Open University/Oxford
University Press, 1996
477 pp. £25.99
ISBN 0 19 856451 1

AN INVALUABLE RESOURCE FOR TEACHERS AND TRAINEES NEEDING BACKGROUND KNOWLEDGE ABOUT ALTERNATIVE WAYS TO GENERATE ENERGY.

This is not a new publication, but for me it has become the 'bible' for information about renewables and the technology required to generate power. Most important of all, though, it deals honestly and in detail with the environmental impact of energy generation and how renewables can fit in to the world's energy systems.

The book has highly detailed sections on solar heating and solar power; biomass; hydroelectricity; tidal, wind and wave energy; geothermal energy; and a final section comparing these, looking at changing patterns of energy use and balancing economic and environmental considerations. Each section has literally dozens of diagrams, charts and illustrations of how things work, and there is an introduction (for those who feel a bit unsure) about what energy is, its different forms, the units in which it is measured, fuels and heat.

One great strength of this book is its comprehensiveness. Even if you simply want to make a model windmill, to choose one example, there are pages of illustrations of mills ancient and modern, vertical and horizontal, even a section on the world's winds, how they circulate, and the power of the wind. It does not pretend that things are simple: but you come away feeling you have learned all you need to know.

In the preface, Godfrey Boyle makes the point that *'the world will need many more professional people with a thorough knowledge of the renewable energy sources ... their environmental impact, [and] the general public will also need to have a broad understanding of renewables and their potential role in satisfying the world's energy requirements'*.

As teachers, this applies to us powerfully: and if you agree with him, then I suggest there is no better book to have on your desk when thinking about or planning a topic on energy.

Alan Peacock
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Science and ICT in the primary school

John Meadows
London: David Fulton, 2004
172 pp. £15.00
ISBN 1 84312 120 4

A CREATIVE APPROACH TO 'BIG IDEAS' FOR TRAINEE AND NEWLY QUALIFIED TEACHERS

This book provides a wide range of ideas for a creative approach to the teaching of science, putting the emphasis on teaching and learning of big ideas and using information and communication technology (ICT) for support and enhancement. Its aim is not to provide a bank of ready-made lesson plans but to suggest ways to put theory, knowledge, skills and creativity into practice.

The book explains what is meant by a creative approach, exploring the 'big ideas' principle and some of the major teaching and learning theories

that have been used to justify approaches to the teaching of science and ICT. The big ideas themselves arise from the way the UK National Curriculum is structured and make links to key stage 3. A chapter is devoted to each big idea: flight (exploring forces), sustainability (ourselves, other animals and environments), light, everyday life and experience, energy, materials and living things.

These chapters provide clear starting points and developments, exploring a variety of activities and ideas, suggesting questions to help children develop their knowledge and understanding, to stimulate investigation and to explain their reasoning. The author also considers common misconceptions and how they can be answered. Much of the suggested use of ICT is to support and enhance teaching and learning through the use of interactive whiteboards and teacher-prepared materials, although there are also ideas for the use of databases, spreadsheets, word-processing, paint programs, CD-ROMs and the Internet. Each chapter contains a list of websites that may provide resources or further ideas. However, some of the ideas rely on the availability of IT suites or relatively large numbers of laptops, and take little account of children's ICT skills.

An excellent chapter on sustainability should get everyone thinking about themselves and the world around them and using ICT effectively to help them. There are also stimulating ideas for the use of light meters, cameras and data-loggers in a packed chapter on light and colour. The author acknowledges that it is too easy to use ICT just for its own sake, e.g. a digital microscope is a wonderful thing, or to prove the obvious, and suggests that a clear objective for the use of ICT is set – in the above case it might be finding an answer to a question such as *'How does a worm manage to move without*

arms or legs?'

Whilst aimed at trainees and newly qualified teachers, this book would be of use to subject leaders wishing to adopt a more creative approach to the teaching of science. The big ideas approach should give plenty of scope for creativity. It is primarily a book about teaching and learning in science, making effective use of ICT to do this, and suggests the reader should decide whether the objective of an activity or a lesson relates to science or ICT.

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Learning science outside the classroom

Ed. Martin Braund and Michael Reiss
London: RoutledgeFalmer, 2004

238 pp. £19.99
ISBN 0 415 32117 4

A PRACTICAL GUIDE ON HOW TO USE THE OUTDOOR CLASSROOM TO ENHANCE TEACHING AND LEARNING OF SCIENCE

This book aims to widen children's scientific and learning experience by reaching beyond the constraints of the conventional classroom into the real world of science and scientific discovery. It draws on a wide range of contexts including museums, media, rural, home-based and industrial settings to generate ideas and stimulus for learning.

Underpinned by learning theory, the authors develop a strong argument for moving out of the conventional classroom to encourage life-long learning. In a refreshing and accessible way they suggest benefits in terms of children's attitudes towards science, yielding a more rounded understanding of the application of science to everyday life. They suggest that by using the outdoor classroom children experience a fuller range of learning opportunities, enabling ownership of their own learning to take shape. They learn more about the processes of science and can develop their own attitudes and values towards it.

Drawing on a selection of case studies and teacher experience, the authors

Answer to 'Science puzzle' (page 7):

This is a biogas generator for domestic cooking, as used in many Tanzanian homes. Cow dung is put in via the dish on the left, which gives off methane gas that passes through the tube to the gas ring. Spent dung is removed via the dish on the right.