Teaching primary science outdoors

Helen Spring
Hatfield: Millgate House Education, 2021
124 pp. plus downloadable resource pack. £20.00
ISBN 978 0 863 57473 3

Wholeheartedly recommended to anyone wanting practical guidance on taking science learning outside

It is a joy to open *Teaching primary science outdoors*, since it is immediately clear that this is going to be such a useful and practical book. Starting from the principle that all science lessons can take place outdoors, the author demonstrates how to do this with practical activities for every primary age group, with the full range of topics and enquiry types.

The book begins with a brief introduction highlighting the benefits of outdoor learning, followed by 28 detailed lesson plans, four for each year group from ages 5 to 11. The activities do not describe school trips; rather they are 'everyday' lessons that often take place just outside the classroom door. The topics range from the expected plants and living things, to those that may be rarely seen outdoors, such as forces and electricity.

Each lesson plan includes both conceptual and working scientifically objectives, a resource list, a clear explanation of the activity and a vocabulary list, together with ideas for support and extension. In addition to this, each contains a science capital section, which prompts discussion around how the content links to the child's own experience at home and real-life applications and jobs. Assessment is embedded within the lesson plans, both in consideration of what meeting the objective would look like, and how to formatively assess within the lesson.

From the way each lesson is described, including practical tips throughout, it is clear that the explanation comes from experience of carrying out the activities with children. It is also good to see real pictures of the activities and some pupil outcomes, which are much more supportive than 'stock images' to make a book look attractive. As a Millgate House publication, who are famous for concept cartoons, readers will be pleased to see a couple of examples within this publication too.

The book also makes use of the new Millgate/ASE bookshop website (www.millgatehouse.co.uk) by including a downloadable resource pack, which contains additional photographs (of plants etc.), weblinks and worksheets to support the activities.

I would wholeheartedly recommend this book to anyone wanting to take science learning outside, and even more so to those who are uncertain, because this text will give you the confidence to get out there!

Sarah Earle
Reader in Education, Bath Spa University

Science school: 30 awesome STEM experiments to try at home

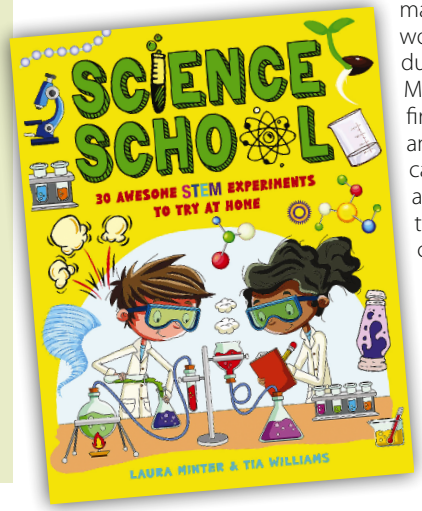
Laura Minter and Tia Williams
Lewes, East Sussex: Button Books, 2021
125 pp. £12.99
ISBN 978 1 78708 106 2

Fantastic collection of experiment ideas for parents to try at home with their children

This bright and fun book is a collection of 30 easy-to-do experiments that should engage child and adult alike, using the simplest of resources and carried out in the comfort of your own home. The introduction shares why science is so important to us all and really embeds the ideas of science capital, in relating science to our own lives. The 'Getting started' section is an important checklist of items that you would need to have to interact with these experiments, so readers can be well prepared to take part.

The layout, fonts, images, photographs and fun activities would be very appealing to children and this book is sure to keep them entertained for hours. The book is not scared to use some more complex scientific vocabulary, with the detailed glossary providing good explanations.

Each of the 30 experiments is presented by means of clear and simple step-by-step instructions, accompanied by inspiring photographs to aid understanding. Each title has a linked image, which makes this book very aesthetically pleasing. The added bonus is that all the science is explained, so it ensures a rich conversation can be had between parent/teacher and child.



There is a heavy focus on chemistry and physics, such as *Mouldy bread* and *Gravity-defying* water, with a few biological experiments, such as *Germinating seed in a jar* and a *Soda Bottle ecosystem*. Some favourites like a *Water xylophone* and *Baking soda fizz bombs* make an appearance but this book also brings on different experiments, like a *Spinning homopolar structure*. I personally love the *Moveable hand* activity and can't wait to give it a go!

This would be a perfect book for a prize, or to recommend to parents for their children. I would even purchase a copy to have as a resource in school to use as ideas for lessons or as activities for a STEM Club. The book will promote a love of science, letting children become scientists and encouraging questioning through awe and wonder activities.

Kathryn Jagger
Assistant Headteacher and Science Lead at Spotland Primary School, Rochdale

The secret life of bees

Moira Butterfield and Vivian Minekar
London: Words and Pictures, 2021
47 pp. £12.99
ISBN 978 0 711 26049 8

A honey-coated dream of a child's book, which will instil the awe and wonder of nature in any child

The secret life of bees is a marvellous venture into the world of the winged insect by duo Moira Butterfield and Vivian Minekar. What strikes the reader first is the beautifully detailed and colourful front-cover, its carefully crafted illustrations awash with sunshine yellow that paints a smile on any child's face!

On page 5, the reader is addressed directly by Buzzwing, the honeybee, who explains what the book contains: facts, interesting and insightful tales and child-friendly, engaging games. Telling the book through the voice of a bee is

a masterstroke by the authors: it captures the imagination of the reader in a lively and authentic way. Buzzwing initiates the 'fun' by asking us: '*Can you find my neighbour. Whisker Mouse?*'

The poetic introduction to when Buzzwing was born graces pages 6 and 7, while simultaneously explaining the hierarchy of hive life: the worker bees (like Buzzwing), the Queen bee and the drones. There is always a delightful scientific edge to every page. Primary-age children get a wonderful slice of scientific knowledge in

every instalment, thus increasing their understanding of the importance of bees in the real world and adding to their science capital.

Sandwiched between Buzzwing's enduring narratives of bee-life are tales, myths and historical stories from all around the world. Buzzwing takes us to Greece for '*The baby and the bees*', India for '*The boy who ate sky honey*' and Thailand for '*How the elephants got their trunks*'. These stories show how ingrained bees are in cultures around the world; it adds a degree of magic and awe to the book.

The secret life of bees is a honey-coated dream of a child's book, which will instil the awe and wonder of nature in any child who has the pleasure of coming across it. For teachers, it is a resource that offers a kaleidoscopic perspective into the bee world and can be moulded into lessons that will stay with children for a lifetime.

Michael Good

Y1 Teacher and Science Coordinator, Stoneferry Primary School, Hull

The world's most pointless animals: or are they?

Philip Bunting
80 pp. £12.99
London: Happy Yak, 2021
ISBN 978 0 7112 6239 3

Amusing and unusual details about some 'rather silly' animals; highly recommended

This is a hilarious and beautifully illustrated reference book that teaches children fun facts about some 'rather silly' animals. Each page focuses on a different animal (from the familiar pigeon to the more unusual naked mole rat), giving plenty of detail as well as wry comments: the inland taipan has a 'bad attitude' apparently. The book is laid out in an eye-catching way, with colourful pages and a large modern illustration of the animal featured. The made-up Latin names for the animals are one of my favourite parts of the book, particularly the sea urchin '*Littlus priccus*' and the jellyfish '*Wibblious wobblious ouchii*'!

I would read sections of this book to my class of 5- to 6-year-olds, but the vocabulary used is more suited to older children of 9–11. Younger children would definitely enjoy looking at

the pictures and reading the funny captions (even if some of the jokes go over their heads). This book would be particularly useful when teaching the 'Living things and their habitats' topic but would be enjoyed at any time in class or at home. It is probably not a book to be read in one go, but to be flicked through to find an interesting fact. Did you know, for example, that the ostrich ('*Biggus chickus*') can run at speeds of up to 70 mph and lays eggs that weigh 1.5 kg?

I would highly recommend this book, as it is amusing and full of unusual details such as '*quokkas eat each meal twice in order to extract as much good stuff as they can from each mouthful*'. The book also sends an important message about valuing differences and respecting the planet. It ends with a great message: '*no matter who we are, there is a place for each and every one of us*'.

Catherine Ward-Lynch

Teacher, Bowlee Park Community School, Manchester

How colour works

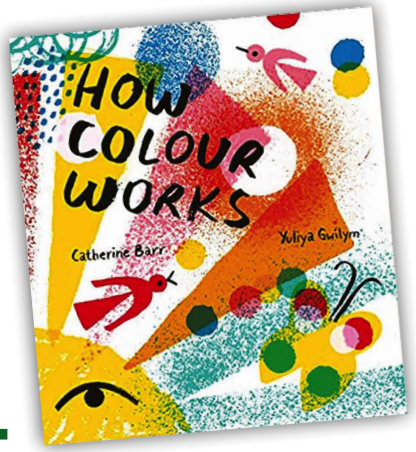
Catherine Barr and Yuliya Gwilym
London: Red Shed, 2020
24 pp. £10.99
ISBN 978 1 4052 9256 6

A winner on all sides and I am certainly going to be looking for the other books written by this author

This book is truly wonderful; teachers and parents alike will love it, with its bright, colourful, simple illustrations and easy-to-read style. I love the way the content is presented, with key information in bold text, more detail in the normal typeface, and italics for extra facts. The illustrations encourage you to look into them more deeply, but also to read the more in-depth explanations of concepts, such as how and why we see rainbows. The explanations and examples the book uses to describe scientific concepts are easily applied to real-life contexts and there are many opportunities for children to ask their own questions.

A hardback book with paper thickness sturdy enough for most classroom situations, this is a definite must for any school wanting to add to their range of books. It could be used as a reference point in the classroom or to sit alongside displays for children to pick up, flick through and read sections. Alternatively it would be ideal for parents to sit and read with their child.

I particularly like the way age-appropriate science vocabulary is used: even light absorption is explained in a simple way for younger children to understand. The book covers a varied range of subjects linked to colour,



including sections about seeing colour and changing colour; there is even a section on 'blood red', where we learn about icefish that have '*ghostly colourless blood without any pigment … they don't use much energy, so they don't need red blood*'. Even as an adult I learnt some fascinating facts from reading this book, such as '*pigeons have at least four types of cone cell … when a pigeon looks at grass it probably sees green in shades invisible to the human eye*'.

This is a winner on all sides and I am certainly going to be looking for other books written by this author.

Jane Banham CSci Teach

STEM lead and SLE, Friskney All Saints Primary School

Black Hole

The Remarkablz
Card game. £6.00
theremarkablz.com

A card game that can be enjoyed at home, in the primary school classroom or anywhere where science can be celebrated in a subtle yet wholly fun way, age 3+

'The goal is to form and discard pairs of cards. Make sure you're not the player left getting sucked into the Black Hole at the end of the game. Why a Black Hole? It's the biggest threat any superhero could face.'

The box that contains these playing cards is both fun and mysterious, with the back illuminating that the fast-moving card game is

brilliant for ages 3 plus. It encourages the player/s to use their own 'superpowers' to pair up the Science Superheroes. By elevating the status of these people in particular science fields, the game will intrigue and enthral all children of a primary school age. It warns though '*Don't be the last player holding the Black Hole card…*' As a teacher, this is a card game I would use in the classroom because of its interactive qualities and the way in which science figures (both known and lesser-known figures) are celebrated.

The rules are relatively straightforward: the cards are dealt and then the players attempt to find as many pairs as possible. Essentially, each player fans out their cards so the player to the left can choose a card. The player must not be allowed to see the player's hand. As play continues, pairs are discarded onto the table immediately. The player left with the unmatched card (the Black Hole) is the unfortunate loser.

The more you play this card game, the easier it becomes. Thus, the overcomplicated nature of some card games, where sometimes rules become lost or confused, are cast aside. Fun and gamesmanship take precedence.

The illustrations on the cards themselves are cartoonified but in a wholly positive way. The younger audience can relate to the drawings because of influences in modern culture such as Marvel and DC. Take the Alice Parker card for example: her superhero attire is striking (emblazoned in juxtaposed colours) and her science-based link is 'Heat Generation'.

Black Hole is a card game that can be enjoyed at home, in the primary school classroom or anywhere where science can be celebrated in a subtle yet wholly fun way.

Michael Good

Y1 Teacher and Science Coordinator, Stoneferry Primary School, Hull

Top Quarkz

The Remarkablz
Card game. £7.50

Collectible top-trumps-style game featuring scientists, inventors, and engineers as superheroes, age 8+

The cartoon-esque figure on the front of the box really sets the scene for this fantastic top-trumps-style card game. It is testament to the small team who make these cards how striking and accessible they are. Their name itself, 'Remarkablz', conjures up imagery of the fantastical and brilliant. The cards are extremely child-friendly and really will

pique the interest of children of 8+ (which is the audience it is intended to capture, up to 108, supposedly).

The 'How to Play' card explains the categories on each top trump card: Superpower, Passion, Location, Sidekick and Weakness. If we take 'Superpower', for instance, this describes the superheroes' (scientists') superpower linked to their discovery, while 'Passion' illuminates the superhero's passions, likes, discoveries, interests and inventions. The categories have been carefully thought through and really capture the imagination; they are snappy and will intrigue the reader. The rules of the game are like any other traditional top trumps card game, but I believe this particular version has an added twist, an idiosyncratic edge over its rivals.

The cards themselves are not just top trumps cards, they are a gateway into the world of science, celebrating the multiculturalism and the wide-ranging occupations that children may not be aware of. Each card is expertly illustrated and emphasises the field of work the scientist works in. Particularly useful is the little fact at the bottom of each card in a white typeface, which explains why the scientist is a superhero!

Ultimately, these cards make science fun for a younger audience and will really pique the interest of the next generation in the particular fields featured. These cards could be used to spice up a science lesson or as a reward in the classroom. A must for all science-loving children.

Michael Good

Y1 Teacher and Science Coordinator, Stoneferry Primary School, Hull

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