

# PRIMARY SCIENCE EDUCATION

## A TEACHER'S TOOLKIT

Primary educators can feel overwhelmed by the knowledge required to teach science concepts. *Primary Science Education: A Teacher's Toolkit* is an accessible and comprehensive guide to primary school science education and its effective practice in the classroom.

With a focus on preparing teachers for successful classroom teaching, *Primary Science Education* is structured in two parts: Planning for Science and Primary Science in the Classroom. Each chapter covers fundamental topics, such as: curriculum requirements (including the Australian Curriculum and Australian Professional Standards for Teachers); preparing effective learning sequences with embedded authentic assessment; combining science learning with other learning areas, such as technologies and STEM; and critically analysing the teacher's role in the classroom.

The text features short-answer and 'Bringing it Together' questions to encourage readers to consolidate their understanding of key themes. Case studies throughout provide guidance on the classroom experience and Teacher Background Information boxes explore topics where more in-depth knowledge is required. The book is supported by a suite of online resources, including video interviews with Australian primary teachers and students, and downloadable activities. The online resources also include multimedia links to a variety of materials that are an essential component of this toolkit.

Written by an expert in the field with extensive research and classroom experience, *Primary Science Education* is an indispensable resource for pre- and in-service primary educators.

**Anne Forbes** is a researcher and senior lecturer in primary school science education at Macquarie University, with many years of classroom experience.

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A T E A C H E R ' S T O O L K I T

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Shaftesbury Road, Cambridge CB2 8EA, United Kingdom

One Liberty Plaza, 20th Floor, New York, NY 10006, USA

477 Williamstown Road, Port Melbourne, VIC 3207, Australia

314–321, 3rd Floor, Plot 3, Splendor Forum, Jasola District Centre, New Delhi – 110025, India

103 Penang Road, #05–06/07, Visioncrest Commercial, Singapore 238467

Cambridge University Press is part of Cambridge University Press & Assessment, a department of the University of Cambridge.

We share the University's mission to contribute to society through the pursuit of education, learning and research at the highest international levels of excellence.

[www.cambridge.org](http://www.cambridge.org)

Information on this title: [www.cambridge.org/highereducation/isbn/9781009261050](http://www.cambridge.org/highereducation/isbn/9781009261050)

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First published 2023

Cover designed by Tanya de Silva-McKay

Typeset by Straive

Printed in Malaysia by Vivar Printing, March 2023



A catalogue record for this publication is available from the British Library

A catalogue record for this book is available from the National Library of Australia

ISBN 978-1-009-26105-0 Paperback

Additional resources for this publication at [www.cambridge.org/highereducation/isbn/9781009261050/resources](http://www.cambridge.org/highereducation/isbn/9781009261050/resources)

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## ABOUT THE AUTHOR

**Anne Forbes (PhD)** has a wide range of science-related experiences including being a plant pathology researcher, primary school science teacher and currently a university researcher and educator in primary school science education. She describes her role as ‘finding effective ways to open doors to the world of science and STEM for young learners and their teachers’. Anne understands the importance of knowing state and territory science curriculum requirements, what to focus on and how to teach key science concepts. This text presents a range of ideas for your consideration, developed from her years of experience combined with the latest educational research and curriculum documents.

## ACKNOWLEDGEMENTS

This book would not be here without the support of the editorial and publishing teams at Cambridge University Press. In particular, I thank Lauren Magee and Rose Albiston, who have provided endless patience, guidance and expertise as the book has evolved into its current form. I also thank the reviewers, who provided useful perspectives, advice and feedback. These insights were invaluable.

I pay tribute to my son Alex who works tirelessly and enthusiastically as the STEM teacher at Bondi Public School, and whose work samples and bespoke online videos for the units 'Brace for Impact' and 'Parachute Professionals' demonstrate contemporary approaches to primary science education. I thank him and participating Year 4 students from Bondi Public School (Angus Dawson, Atticus Smith, Charlie Clark, Edith Brooks, Grace Katekar, Kaya Atayman, Lily Wicks, Olivia Bryden and Rocco Commens), who volunteered their time to produce the video footage used in Chapters 1, 6, 10 and 11. Thank you to the parents and carers who permitted these students to be science 'film stars', and thank you as well to Natalia Greguric, Principal of Bondi Public School, who assisted with negotiating permission from the NSW Department of Education for filming to occur.

I appreciate and thank Sally Biskupic, Karen Suttor and Faye Katsoulas from St Anne's Primary School for permission to showcase their integrated unit of work 'Are we ready for the next natural disaster?' in Chapter 6. I applaud the sustained commitment and dedication of Zoe Stephens from Carlingford West Public School and Kaye Cook from Gol Gol Primary School, who work collaboratively to build environmental and cultural awareness through the City Country Alliance of Schools, and thank them for permission to use their resources for the 'Survival' and 'River of Life' units of work in Chapter 6. These teachers' willingness to share resources means we can all benefit from their creativity and ingenuity in creating primary learning experiences that are deeply relevant, interesting and educational.

This book has taken a year to write, but many years to form. With a childhood immersed in the natural world, a biologist father and a pharmacist mother, it was perhaps inevitable that I would travel a science pathway, but it has not been linear. As new opportunities have arisen, it is my life partner, Greg, who has endlessly encouraged and supported me, ably supported by my four amazing children and their partners. Thank you to my family fan club – this would not have happened without you!

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# GUIDE TO ONLINE RESOURCES

Additional online resources for *Primary Science Education: A Teacher's Toolkit* for students are freely available at [www.cambridge.org/highereducation/isbn9781009261050/resources](http://www.cambridge.org/highereducation/isbn9781009261050/resources). Visit the site to explore a variety of resources, including weblinks, multimedia links, videos, guided responses to all questions posed and downloadable activities and appendices.



This icon is used throughout the book to indicate that a resource relating to the content under discussion is available online. The icon's descriptor can be used to help you easily identify each resource in the chapter's downloadable document.

## PRIMARY SCIENCE EDUCATION

### Chapter 1

### Why do we teach science in primary school?

#### Guided responses

#### Short-answer questions

##### Short-answer questions 1.1

1. Recognising and accepting that other people have different values, beliefs and attitudes from your own is an important skill. In your own classroom, how could you identify students' different perceptions of 'time' by drawing on different cultural perspectives of a person's age?

You could ask students to draw or describe how they know how old they are. Most cultures recognise birth as the beginning of a person's life and thereafter that 'birth day' is celebrated annually. 'Age reckoning' is practised in some East Asian cultures such as Korea, where a baby is one year old at birth and then gains another year at the new year. See [www.sbs.com.au/topics/voices/culture/article/2016/06/23/what-age-reckoning](http://www.sbs.com.au/topics/voices/culture/article/2016/06/23/what-age-reckoning) and [www.abc.net.au/news/2019-04-12/south-koreas-unusual-system-to-calculate-ages/10998550](http://www.abc.net.au/news/2019-04-12/south-koreas-unusual-system-to-calculate-ages/10998550) for more information.

2. Watch 'Polar Bears' (Multimedia link 1.3) discuss global warming and write down your thoughts about the worldviews of the polar bear characters.  
The bears are identifying causal factors based on their immediate, local experiences. For example, they attribute climate change to the size of the fishing hole, using synthetic lines, facing east and wearing a blue hat. They believe humans would never do anything to harm them.