

# Teacher Notes

## Themes

- Extinct animals
- Australian environment
- Earth in prehistoric eras

## Key learning outcomes

- Understand what opal fossils are, how they are formed and how they are different to other fossils.
- Learn about *Fostoria*, the Opal Dinosaur, and discover what makes it so special.
- Identify some of the animals that existed in Australia during the Cretaceous period.

## Key curriculum areas

- **Science:** Science Understanding (Biological sciences, Earth and space sciences)
- **English:** Language; Literacy
- **The Arts:** Visual Arts
- **HASS:** Geography; Questioning and researching

## Publication details

*The Opal Dinosaur*

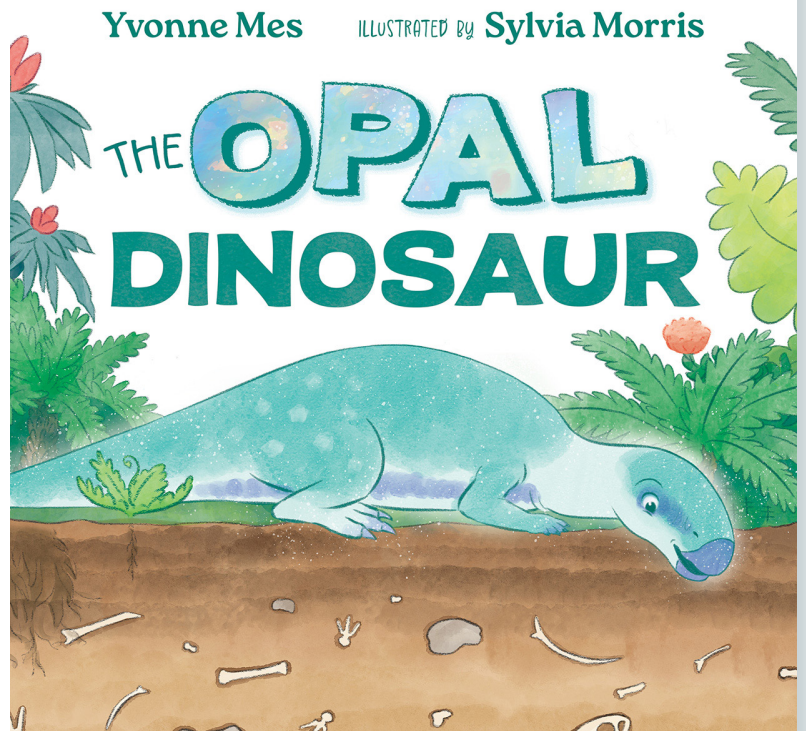
ISBN: 9781486316793

These teacher notes are licensed under a Creative Commons Attribution-NonCommercial-ShareAlike 4.0 Licence (CC BY-NC-SA). They may be reproduced free of charge but may not be offered for commercial sale.

Teacher notes prepared by David Gullan.

CSIRO Publishing  
Private Bag 10  
Clayton South, VIC 3169, Australia

Website: [www.publish.csiro.au](http://www.publish.csiro.au)  
Tel: 1300 788 000 (local call in Australia)  
Email: [publishing.sales@csiro.au](mailto:publishing.sales@csiro.au)



# The Opal Dinosaur

Yvonne Mes and Sylvia Morris

## About the book

Millions of years ago, a small dinosaur slips and scrambles, before sinking into the earth. Her bones lie under the soil, slowly transforming into something wonderful. Then, one day, a miner spies a shimmer of blue and green.

*The Opal Dinosaur* explores the amazing discovery of rare opalised bones. Follow the journey as the bones are found, forgotten and then finally identified as an exciting new dinosaur species.

## Recommended for

Readers aged 5 to 9 (Years 1 to 4)

# Teacher Notes

## About the author and illustrator

**Yvonne Mes** is an author and illustrator from Brisbane. She coordinates the Brisbane-based writers group, Write Links, and is a frequent speaker at schools and literary events.

**Sylvia Morris** is an illustrator with a background in mathematics, who combines her analytical and creative puzzle solving skills with her love of reading in her illustrations.

## Pre-reading questions or activities

### Cretaceous period

Before reading the book, talk to the students about the Cretaceous period. How long ago was the Cretaceous period? Were there dinosaurs in the Cretaceous period? Would the Australian landscape have looked different at that time? What did the world look like then?

### Fossils

Ask the students if they know what fossils are. Where are fossils found, and where are they kept? Have you ever seen a fossil in a museum? What fossils were they?

## Discussion questions

### Science

1. *'The little dinosaur has transformed into a beautiful, rare gem – a precious opal.'* In the story the author teaches us about the incredible opal fossils of *Fostoria dhimbangunmal*. How are opal fossils different to regular fossils?
2. The main character of our story is *Fostoria*, the Opal Dinosaur. What were the habitat and diet of this special dinosaur?
3. On one of the pages the author includes a labelled diagram. What information does this labelled diagram teach the reader? Why do you think the author uses a labelled diagram?
4. *'It's 66 million years ago and an asteroid crashes into the other side of Earth. The time of the dinosaurs is no more.'* What event does this passage describe? What other events contributed to the disappearance of the dinosaurs?

# Teacher Notes

## English

1. The author describes a number of other dinosaurs from the Cretaceous period. Can you name them? What nonfiction text feature can help you learn more about these creatures?
2. Onomatopoeias are words that represent sounds. In this story the author uses a number of these words. Can you find all the onomatopoeias? Where are the sounds coming from? Why do you think the author uses onomatopoeias in the story?

## The Arts

1. The illustrator uses a border around the illustrations in the first part of the story, which eventually disappears as '*the little dinosaur's body melts into the earth*'. What do you think the presence/absence of the border represents? How does this visual element help the reader understand the text? Does the border reappear at any point in the story?

## HASS

1. In the story the author mentions the Gamilaraay people. Who do you think these people are? Why do you think they are significant?

# Activities

## Science

### *Information report*

The author and the illustrator provide lots of terrific details about *Fostoria*, the Opal Dinosaur. Use this information to compose a detailed information report on *Fostoria dhimbangunmal*. Remember to think about appearance, diet, habitat, behaviours and threats.

### *Formation of opal fossils*

In the back pages the author goes into more detail about how opal fossils are formed. Using this information, and doing some further research as a class, create your own labelled diagram that depicts the process of an opal fossil forming.

# Teacher Notes

## English

### *Creative writing prompt*

*'Ten metres below the surface, Bob drills into the rock face. It is hot and dangerous work. As he lifts up his drill, tired and sore, he sees something.'*

Use this exciting prompt to inspire some creative writing.

Where is Bob?

What has he seen?

Why is Bob underground?

How is this discovery going to change Bob's life?

Who is Bob?

What will he do next?

## The Arts

### *Opal fossils*

Students will create their very own opal fossils to display around the classroom.

**Safety:** This activity uses scissors. Be careful when cutting, or ask an adult for help.

#### **You will need:**

- White paper and coloured paper
- Pencil
- Paint brush
- Different coloured paints
- Scissors
- Glue or sticky tape

# Teacher Notes

## What to do:

1. First display some images of Australian artist Dianne Delandro's 'Opal Colours' artwork for inspiration and discussion (see <https://bluethumb.com.au/dianne-delandro/Artwork/opal-colours>, and click on the photos to enlarge them).
2. Then ask students to draw a series of dinosaur bones on a white sheet of paper.
3. Next, ask them to apply some light swipes of cool coloured paints, brushing in every direction. (No need to stay within the lines as we will be cutting the bones out later.)
4. Then, in the gaps begin to apply warmer colours, continuing to brush in all directions. Remember red is the rarest colour in opals so students should only use a little in their creation.
5. Once their page is looking like a beautiful opal they can begin to cut out the different bone shapes.
6. Finally, they can paste their newly created opal fossils onto their desired backing paper for contrast.

## HASS

### *Research project*

Read the timeline spread across the front and back endpapers of the book and discuss all the different events. This timeline represents the history and journey of the Opal Dinosaur all the way to the present day. With your class, choose another famous dinosaur displayed in a museum and create a timeline with relevant events from its journey, from life to museum display (for example, the *Triceratops* display at the Melbourne Museum). Many major museum websites have terrific interactive elements for you to research and select your dinosaur display to base your timeline on.

# Teacher Notes

## Australian Curriculum Links (Version 9.0)

Year level	Learning area: Science	Other learning areas
Years 1/2	<p><b>Science Understanding: Biological sciences</b></p> <ul style="list-style-type: none"> <li>Identify the basic needs of plants and animals, including air, water, food or shelter, and describe how the places they live meet those needs (<a href="#">AC9S1U01</a>)</li> </ul>	<p><b>English: Language: Text structure and organisation</b></p> <ul style="list-style-type: none"> <li>Explore how texts are organised according to their purpose, such as to recount, narrate, express opinion, inform, report and explain (<a href="#">AC9E1LA03</a>)</li> <li>Identify how texts across the curriculum are organised differently and use language features depending on purposes (<a href="#">AC9E2LA03</a>)</li> </ul> <p><b>English: Literacy: Texts in context</b></p> <ul style="list-style-type: none"> <li>Discuss different texts and identify some features that indicate their purposes (<a href="#">AC9E1LY01</a>)</li> <li>Identify how similar topics and information are presented in different types of texts (<a href="#">AC9E2LY01</a>)</li> </ul> <p><b>English: Literacy: Interacting with others</b></p> <ul style="list-style-type: none"> <li>Use interaction skills including turn-taking, speaking clearly, using active listening behaviours and responding to the contributions of others, and contributing ideas and questions (<a href="#">AC9E1LY02</a>)</li> <li>Use interaction skills when engaging with topics, actively listening to others, receiving instructions and extending own ideas, speaking appropriately, expressing and responding to opinions, making statements, and giving instructions (<a href="#">AC9E2LY02</a>)</li> </ul> <p><b>HASS: Knowledge and understanding: Geography</b></p> <ul style="list-style-type: none"> <li>The interconnections of First Nations Australians to a local Country/Place (<a href="#">AC9HS2K04</a>)</li> </ul> <p><b>HASS: Skills: Questioning and researching</b></p> <ul style="list-style-type: none"> <li>Develop questions about objects, people, places and events in the past and present (<a href="#">AC9HS2S01</a>)</li> </ul> <p><b>Visual Arts: Developing practices and skills</b></p> <ul style="list-style-type: none"> <li>Experiment and play with visual conventions, visual arts processes and materials (<a href="#">AC9AVA2D01</a>)</li> </ul> <p><b>Visual Arts: Creating and making</b></p> <ul style="list-style-type: none"> <li>Use visual conventions, visual arts processes and materials to create artworks (<a href="#">AC9AVA2C01</a>)</li> </ul>
Years 3/4	<p><b>Science Understanding: Biological sciences</b></p> <ul style="list-style-type: none"> <li>Compare characteristics of living and non-living things and examine the differences between the life cycles of plants and animals (<a href="#">AC9S3U01</a>)</li> </ul> <p><b>Science Understanding: Earth and space sciences</b></p> <ul style="list-style-type: none"> <li>Compare the observable properties of soils, rocks and minerals and investigate why they are important Earth resources (<a href="#">AC9S3U02</a>)</li> </ul>	<p><b>English: Language: Text structure and organisation</b></p> <ul style="list-style-type: none"> <li>Describe how texts across the curriculum use different language features and structures relevant to their purpose (<a href="#">AC9E3LA03</a>)</li> </ul> <p><b>English: Literacy: Texts in context</b></p> <ul style="list-style-type: none"> <li>Recognise how texts can be created for similar purposes but different audiences (<a href="#">AC9E3LY01</a>)</li> </ul> <p><b>English: Literacy: Interacting with others</b></p> <ul style="list-style-type: none"> <li>Use interaction skills to contribute to conversations and discussions to share information and ideas (<a href="#">AC9E3LY02</a>)</li> </ul> <p><b>HASS: Knowledge and understanding: Geography</b></p> <ul style="list-style-type: none"> <li>The ways First Nations Australians in different parts of Australia are interconnected with Country/Place (<a href="#">AC9HS3K04</a>)</li> </ul> <p><b>Visual Arts: Developing practices and skills</b></p> <ul style="list-style-type: none"> <li>Experiment with a range of ways to use visual conventions, visual arts processes and materials (<a href="#">AC9AVA4D01</a>)</li> </ul> <p><b>Visual Arts: Creating and making</b></p> <ul style="list-style-type: none"> <li>Use visual conventions, visual arts processes and materials to create artworks that communicate ideas, perspectives and/or meaning (<a href="#">AC9AVA4C01</a>)</li> </ul>

# Teacher Notes

## Related books from CSIRO Publishing

For younger readers:

- *Dinosaur Questions & Answers!* (<https://www.publish.csiro.au/book/8034>)
- *Diprotodon: A Megafauna Journey* (<https://www.publish.csiro.au/book/8087>)

For older readers:

- *Rocks, Fossils and Formations: Discoveries Through Time* (<https://www.publish.csiro.au/book/7864>)
- *The Great Australian Science Book* (<https://www.publish.csiro.au/book/8083>)

## Double Helix magazine

Packed with fun, exciting and quality articles, Double Helix magazine is created to inspire young readers. It covers a range of topics across science, technology, engineering and maths.

Learn more on our Teachers page: <https://doublehelixshop.csiro.au/en/Teachers>. Subscriptions can be purchased via the Double Helix website: <https://doublehelixshop.csiro.au/Subscribe>

## Double Helix blog

Looking for interesting science, technology, engineering and maths ideas? For our latest news, hands-on activities, quizzes and brainteasers, visit the Double Helix blog: <https://blog.doublehelix.csiro.au>

There is plenty of free content that can be used at school or home to support learning.

## Double Helix Extra

Sign up to receive a fortnightly Double Helix email newsletter, including a quiz, brainteaser, news and a hands-on activity: <https://doublehelixshop.csiro.au/eNewsletter>

## Other CSIRO resources

CSIRO has developed and delivered a broad range of high-quality STEM education programs and initiatives for nearly 40 years. Our programs aim to inspire the pursuit of further STEM education among students and the community, to equip the emerging workforce with tomorrow's skill sets, and to strengthen collaboration between industry and classrooms across Australia. For more information visit: <https://www.csiro.au/en/Education>