

## Teacher Notes

# *The First Scientists*

Corey Tutt

Illustrated by Blak Douglas

Teacher notes by Zoe O'Hara

Recommended for ages 7+, year levels 1–6



## SYNOPSIS

*The First Scientists* is the highly anticipated, illustrated science book from Corey Tutt of DeadlyScience. With kids aged 7 to 12 years in mind, this book will nourish readers' love of science and develop their respect for Indigenous knowledge at the same time.

Have you ever wondered what the stars can tell us? Did you know the seasons can be predicted just by looking at subtle changes in nature? Maybe you have wondered about the origins of glue or if forensic science is possible without a crime scene investigation. Australia's First peoples have the longest continuing culture on Earth and their innovation will amaze you as you leaf through the pages of this book, learning fascinating facts and discovering the answers to life's questions.

In consultation with communities, Corey tells us of many deadly feats – from bush medicine to bush trackers – that are today considered 'science', and introduces us to many amazing scientists, both past and present. The breadth of 'sciences' is incredible with six main chapters covering astronomy, engineering, forensic science, chemistry, land management and ecology. The first scientists passed on the lessons of the land, sea and sky to the future scientists of today through stories, song and dance, and many of these lessons are now shared in this book.

Vibrant illustrations by Blak Douglas bring the subjects to life, so you'll never think about science as just people in lab coats ever again!

## ABOUT THE AUTHOR

Corey Tutt is a Kamilaroi man from Nowra on the New South Wales south coast. As a kid, he dreamed of becoming a zookeeper and in high school he developed a love of STEM subjects. But unlike the arts and sport, he found there was little encouragement for Aboriginal people to pursue careers in STEM. In 2018, while working as a research assistant for the University of Sydney, Corey founded DeadlyScience, a not-for-profit organisation that aims to provide science books and telescopes to remote schools in Australia, and connects young Indigenous people with mentors to encourage their participation in STEM subjects.



In 2020, Corey was named the NSW Young Australian of the Year, and a Human Rights Hero by the Australian Human Rights Commission. He continues to work tirelessly to send STEM resources to Indigenous communities, and show First Nations kids that STEM is for them. The organisation has even attracted international attention, with Corey presenting at Harvard and Oxford universities.

## ABOUT THE ILLUSTRATOR

Born Adam Douglas Hill in Blacktown, Western Sydney to a Dhungatti Aboriginal father and Caucasian mother, Blak Douglas was trained in illustration & photography and became self-practiced in painting.

Blak has exhibited in numerous solo and group exhibitions both domestically and abroad. Winning the Kilgour Prize in 2019 became his first major art achievement, followed by becoming the first Aboriginal artist to win the national STILL (life) award in 2021. He has also been a consistent finalist in the Archibald & Wynne Prizes, the Blacktown, Mosman and Paddington Art Prizes.



Blak's art is held in the collections of the National Gallery of Australia, National Museum of Australia, National Maritime Museum, Town Hall Collection, The Art Gallery of NSW, Coffs Harbour Regional Gallery, Taipei Museum, AAMU, Utrecht, and regional Sydney Councils including Blacktown, Campbelltown, Liverpool and Penrith.

## ABOUT THE BOOK

This book does not claim to contain the only examples of first scientists in Australia and it does not claim that each example used in the text is the only group of people to use these particular methods. What it does do is highlight some of the amazing things that have happened and continue to happen around science with our First Nations peoples around Australia.

This text intends to provoke and spark the curiosity of children, inciting them to delve further into their research and knowledge around First Nations peoples and their connection to science throughout history and the modern world, with insight as to what First Nations scientists might connect with in the future.

Reading and studying this text encourages opportunities to:

- connect and build relationships with and learn from local First Nations communities
- learn more about Indigenous science and the people around Australia
- find out about the rich history across a broad range of areas that First Nations peoples have led the way in science
- learn about significant First Nations scientists in today's science world, including the relevance and connection between traditional Aboriginal science and modern science.
- give students the chance to become scientists in the classroom and in their world outside of the classroom
- encourage students to think about pathways for their potential future in science (and other areas) through a range of different methods.

Classroom activities inspired by this text are suitable to be undertaken as one subject or as an integrated unit depending on the school, class and cohort. Below are some suggestions of how the learning can be used to link to the curriculum for teaching, assessing and reporting.

## KEY CURRICULUM AREAS

Key Curriculum Areas	Themes	Key Learning Outcomes	Recommended for
<ul style="list-style-type: none"> <li>Aboriginal and Torres Strait Islander Histories and Cultures</li> <li>Science</li> <li>HASS</li> <li>Technologies</li> <li>Integrated Learning Units</li> </ul>	<ul style="list-style-type: none"> <li>First Nations peoples as the original scientists in Australia</li> <li>Aboriginal and Torres Strait Islander peoples across Australia and their culture</li> <li>Connecting Science histories, Current Science and Science in the future.</li> </ul>	<ul style="list-style-type: none"> <li>Students are able to understand different areas of science occurring in their local area and around Australia.</li> <li>Students are able to comprehend the relationship between First Nations peoples and Science.</li> <li>Students understand that science is in many different forms and all around us.</li> </ul>	<p><b>These lessons are designed to suit year levels 1–6</b> but may be adapted for other cohorts or multi-year level cohorts. They are also able to suit different ability levels.</p>
<b>Australian Curriculum Learning Areas/Strands/Sub-Strands</b>			
<b>SCIENCE</b>			
<b>Years 1–6</b>			
<ul style="list-style-type: none"> <li>Science understanding:             <ul style="list-style-type: none"> <li>Biological Sciences</li> <li>Chemical Sciences</li> <li>Earth and Space Sciences</li> <li>Physical Sciences</li> </ul> </li> <li>Science as a human endeavour:             <ul style="list-style-type: none"> <li>Nature and development of science</li> <li>Use and influence of science</li> </ul> </li> <li>Science inquiry skills:             <ul style="list-style-type: none"> <li>Questioning and Predicting</li> <li>Planning and conducting</li> <li>Processing and analysing data and information</li> <li>Evaluating</li> <li>Communicating.</li> </ul> </li> </ul>			

<b>HASS</b> <b>Years 1–6</b>	
<ul style="list-style-type: none"> <li>• Knowledge and understanding: <ul style="list-style-type: none"> <li>○ History</li> <li>○ Geography</li> </ul> </li> <li>• Skills: <ul style="list-style-type: none"> <li>○ Questioning and Researching</li> <li>○ Interpreting, evaluating and analysing information and data</li> <li>○ Concluding and decision-making</li> <li>○ Communicating.</li> </ul> </li> </ul>	
<b>TECHNOLOGIES</b> <b>Years 1–6</b>	
<ul style="list-style-type: none"> <li>• Design and Technologies – Knowledge and Understanding: <ul style="list-style-type: none"> <li>○ Technologies and society</li> <li>○ Technologies contexts</li> <li>○ Engineering principles and systems</li> <li>○ Food and fibre production/Food specialisations</li> <li>○ Materials and technologies specialisation</li> </ul> </li> <li>• Design and Technologies – Processes and Production Skills: <ul style="list-style-type: none"> <li>○ Investigating and defining</li> <li>○ Generating and designing</li> <li>○ Producing and implementing</li> <li>○ Evaluating</li> <li>○ Collaborating and managing</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>• Digital Technologies – Knowledge and Understanding: <ul style="list-style-type: none"> <li>○ Digital Systems</li> <li>○ Representation of data</li> </ul> </li> <li>• Digital Technologies – Processes and Production Skills: <ul style="list-style-type: none"> <li>○ Collecting, managing and analysing data</li> </ul> </li> <li>• Creating digital solutions by: <ul style="list-style-type: none"> <li>○ investigating and defining</li> <li>○ generating and designing (years 5 and 6 only)</li> <li>○ producing and implementing (years 3–6 only)</li> <li>○ evaluating</li> <li>○ collaborating and managing.</li> </ul> </li> </ul>
<b>OTHERS</b> <b>Years 1–6</b>	
Integrated Learning can also connect to subject areas including: <ul style="list-style-type: none"> <li>• English – All areas</li> <li>• The Arts – All areas</li> <li>• Mathematics – All areas</li> <li>• Languages: Aboriginal languages and Torres Strait Islander languages</li> <li>• Health and Physical Education: Personal, Social and Community Health.</li> </ul>	
<b>CROSS-CURRICULUM PRIORITIES</b> <b>F–10</b>	
<b>Cross-Curriculum Priorities – Organising Ideas</b>	
Aboriginal and Torres Strait Islander Histories and Cultures <ul style="list-style-type: none"> <li>• Country/Place</li> <li>• Culture</li> <li>• People</li> </ul>	

### **Cross-Curriculum Priorities – Science**

Students will have opportunities to learn that Aboriginal and Torres Strait Islander peoples have longstanding scientific knowledge traditions and developed knowledge about the world by:

- observation, using all the senses
- prediction and hypothesis
- testing (trial and error)
- making generalisations within specific contexts such as the use of food, natural materials, navigation and sustainability of the environment.

### **Cross-Curriculum Priorities – Humanities and Social Sciences**

The diverse cultures of Aboriginal and Torres Strait Islander peoples are explored through their:

- long and continuous strong connections with Country/Place and their economic, cultural, spiritual and aesthetic value of place, including the idea of custodial responsibility. Students examine the influence of Aboriginal and Torres Strait Islander peoples on the environmental characteristics of Australian places, and the different ways in which places are represented.
- experiences before, during and after European colonisation including the nature of contact with other peoples, and their progress towards recognition and equality. In particular, students investigate the status and rights of Aboriginal and Torres Strait Islander peoples, past and present, including civic movements for change, the contribution of Aboriginal and Torres Strait Islander peoples to Australian society, and contemporary issues.
- exploration of how groups express their particular identities, and come to understand how group belonging influences perceptions of others.

The use of primary and secondary sources, including oral histories, gives students opportunities to see events through multiple perspectives, and to empathise and ethically consider the investigation, preservation and conservation of sites of significance to Aboriginal and Torres Strait Islander peoples.

### **Australian Curriculum and other states**

The curriculum linked to this document is Australian Curriculum Assessment and Reporting Authority (ACARA) – The Australian Curriculum (SA, NT, QLD, Tas, NSW), which also links to School Curriculum and Standards Authority (WA) and Victorian Curriculum (Vic). (Both have been derived from the Australian Curriculum developed and reviewed by ACARA.)

## **COMPREHENSION**

### **Before reading**

Show students the front cover of the book and explain that they will be learning about some examples of how First Nations peoples in Australia have used science in the past and how they still use science today. Talk about how the sciences used traditionally by First Nations peoples connect with and are relevant to science that is considered western and modern science. Here are some questions to gauge prior knowledge of students and to get them to start thinking about the content that is discussed in the book:

- What do you already know about our local First Nations community?
- What science do we think is already happening in our local area?
- What are some examples that you can think of where First Nations peoples are scientists and/or leaders in our communities?

*\*Wording and language use can be adjusted depending on cohort to help students with level of understanding.*

### After reading

- What traditional sciences outlined in this text are still used today?
- Who are some of the deadly scientists and leaders we have learnt about in the book? Why is their work and passions so important?
- What is important about the connection between the history of science, modern science and the future of science?

## ACTIVITIES

### Area: the first chemists

*Learning from pages 20–21, 23 and 45–53*

**Summary:** In this activity, students will research different ways that plants have been used traditionally and in modern times for different uses. Students will then explore some of the uses for plants by First Nations peoples in their local area.

#### What you need:

- Internet access
- Where possible, access to local groups who may be able to assist with building students' understanding around this area of learning.

#### The activity:

- Read pages 20–21, 23 and 45–53 of *The First Scientists*.
- Watch the video 'Bush Medicine by Brendan Yunupingu' found at <https://www.youtube.com/watch?v=udFaXh4j9Uc>
- Discuss the different uses that First Nations peoples have for plants, including traditional and modern uses.
- Research local Aboriginal or Torres Strait Islander communities and some of the uses they have for plants in their culture.  
*\*If difficult to source this information, refer back to the book and video.*
- If possible, connect with local Aboriginal or Torres Strait Islander communities and invite them to talk about or guide a walk to see what native plants are within your school area and discuss the possible uses for these plants. Students could take photos of or draw what they find.
- Students make a report (could be a video, book creator, poster etc.) about one way in which plants are used by First Nations people in your local area.  
*\*This could be traditional or modern use.*

**Reflection:** At the end of the activity, students will have enhanced their ability to research a variety of uses for plants, especially uses that connect with First Nations peoples. Students will have been given the opportunity to think about the importance of traditional medicines and their relevance today, and the importance of sharing this knowledge with future generations.

**The learning:** Students will have demonstrated understanding of the significance of plants to First Nations peoples in history, current times and in future. Students will also understand the large variety of uses that plants have in our lives and how this connects to many different areas of science.

### Area: protecting animals

*Learning from pages 74–79*

**Summary:** In this activity, students will explore which animals are in danger in their local area. They will research and create ideas for what students can do at a local level for this issue and how they can create awareness in their local community.

#### What you need:

- Internet access
- Where possible, access to local groups who may be able to assist with building students' understanding around this area of learning.

**The activity:**

- Read pages 74–79 of *The First Scientists*.
- Students learn about what classifies an animal as endangered through looking at the chart at this link: <https://www.nationalgeographic.org/media/endangered/>
- Students research animals that are at risk of extinction or under threat in their local area.
- Students identify the reasons that this particular animal is under threat. Examples of reason might include: loss of habitat, predators, viruses etc.
- Students research what is already happening (if anything) to help this animal. Reaching out to local rangers, animal centres, museums and local Aboriginal or Torres Strait Islander communities may help with information about this.
- Students create a plan that they can carry out to build awareness in their school and the wider public about this animal, the threats it faces and ways that the school and the public can help minimise the risk of this animal becoming extinct.

**Reflection:** At the end of the activity, students will discuss why and how they feel they can make a difference for this animal in their local area, and how they may continue to build awareness.

**The learning:** Students will demonstrate their understanding of endangered species, environment and community, and will use tools in technology to build their knowledge around these areas.

**Area: the first engineers**

*Learning from pages 10–29*

**Summary:** In this activity, students will look at the clever inventions First Nations peoples have created that serve different functions and help make their lives easier. Students will then design their own canoe/floating vessel using different items found in nature.

**What you need:**

- Access to items from nature for building a small floating vessel that may include sticks, bark, leaves etc., with consideration of being careful not to damage local environment.
- Stationery or items that may help with building the vessels that may include string, scissors, paper tape etc.
- Somewhere where students can test the floatability of their invention like a sink or a large tub of water.

**The activity:**

- Read pages 10–29 of *The First Scientists*.
- Students look closely at page 24 about canoes and talk about some of the problems or things that the Milewa or Tongala people had to consider when making their canoes and how they solved some of the problems. They might also talk about the differences and similarities of traditional canoes compared to the canoes of today.
- Ask students to think about designing and making their own small floating vessel, and go for a walk on the school grounds to find what they might use to create it. They might like to draw and label their design before they start building.
- Students build their floating vessel.
- Students test their vessel in water and discuss what features work well in their design and what unforeseen challenges may have arisen.
- Students can adapt their design to improve function and further discuss the outcomes of this.
- Students can connect their findings with the processes that the Milewa or Tongala people might have used when they were first inventing their canoes.

**Reflection:** At the end of the activity students will have explored a range of inventions by First Nations peoples and how they traditionally used these to make their lives easier. Students think about whether their vessel has or has not floated and possible reasons why this may be.

**The learning:** Students have explored concepts of the physical sciences using objects from the natural world. Students will connect how design and engineering in the past has led the way for inventions today and in the future. Students have learnt about engineering from a First Nation's perspective.

### **CONSOLIDATING THE LEARNING/REFLECTION**

Encourage students to think about, reflect upon and share ideas by asking these questions:

- What is something new you have learnt from reading and studying this text?
- What is something you enjoyed in the activities inspired from reading the text?
- What is something else you would like to learn about after reading the text and undertaking activities that have stemmed from this text?

*\*Sharing and discussions can occur with different group sizes and can be on many platforms including discussion, writing, presenting, performing etc.*

### **FURTHER LEARNING THROUGH CONNECTIONS**

- Reach out to local Aboriginal or Torres Strait Islander communities via a range of services and organisations that may include, rangers, education groups, community centres, language centres, art centres and cultural advisors.
- Get in contact or visit local museums, education centres, planetariums, animal sanctuaries, zoos, parks and local walking tracks as these places will often have information that links to local knowledge and language.

## **REAL LIFE EXAMPLES IN THE CLASSROOM – EVERYONE IS A SCIENTIST!**

### **Think like a scientist**

*Pages 80–81*

Chris Errington – classroom teacher, Bunuba Class (Black Headed Python), years 2–4

Robinson River School (Garawa Country)

Chris has fostered a strong love of science with students in his class through a range of methods. He helps his students to believe they are scientists by beginning with looking the part. In all areas of science learning with the Bunuba Class, they wear their lab coats and safety glasses which helps them start to believe and understand that they are already scientists. Chris has found that students have shown increased engagement and excitement by doing this and their love of science has spread across the whole school, with other classes noticing the amazing science learning from Bunuba class and wanting to get involved themselves.



## Extending the learning

Pages 76–77

Paul Butters – Gija HASS Teacher

Purnululu Aboriginal Independent Community School

Gija Country

Paul Butters explains that the high school class from Purnululu Aboriginal Independent Community School have an initiative that will help the environment and ecosystems in their own community by undertaking learning about cane toad management. As mentioned in this text, students have developed traps in partnership with local rangers. They have taken this one step further with their learning and are now designing different types of traps. Aspects students have thought about when designing the new traps include the effectiveness of the traps and that the traps can be manufactured through items easily accessible to schools and mobs living in communities.



## RELATED READING

- Learn more about Indigitek at <https://www.indigitek.org.au/>
- Learn more about Indigital at <https://indigital.net.au/>
- *Australia's First Naturalists: Indigenous People's Contribution to Early Zoology* by Penny Olsen and Lynette Russell
- *Young Dark Emu: A Truer History* by Bruce Pascoe
- *K-Zone Magazine* has a regular segment with Corey Tutt and DeadlyScience. More information at <https://www.kzone.com.au/blog/deadlyscience-with-corey-tutt-539564>
- *Saving Seagrass* documentary at <https://www.sbs.com.au/ondemand/zh-hant/video/1650868291865/saving-seagrass>  
This documentary is a great example of how the Yawuru people use their traditional knowledge of science and use modern techniques to care for the environment on Yawuru Country.
- Is your school already a DeadlyScience school? If not, they would love to hear from you and can be contacted via their website at <https://deadlyscience.org.au/>  
DeadlyScience is able to offer connections with scientists, role models, resources and provide support. The author of this text, Corey Tutt is the founder of DeadlyScience and is the current CEO of this organisation.