

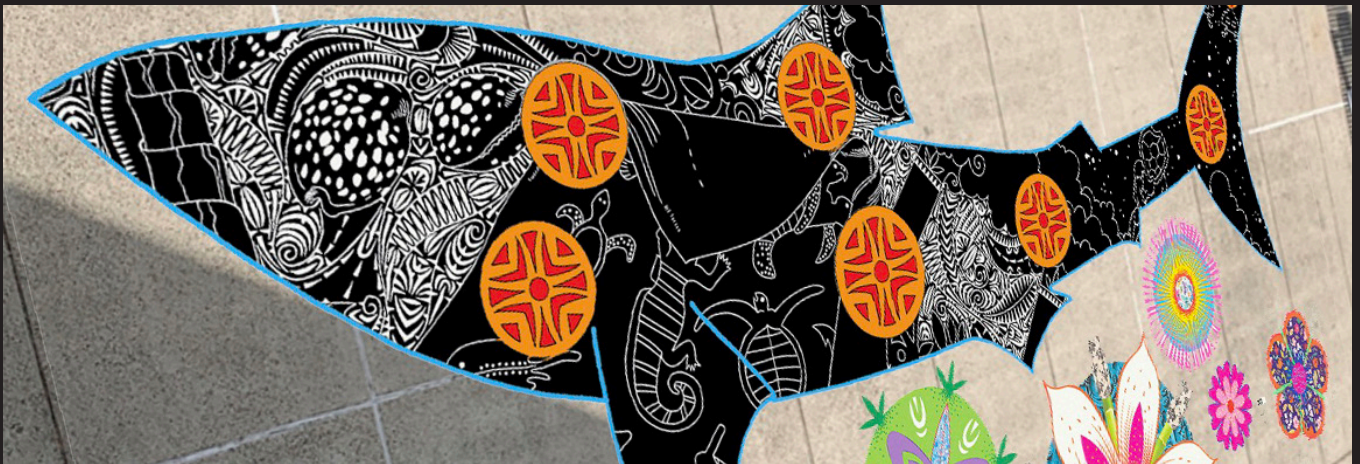
QUEENSLAND  
**MUSEUM**  
NETWORK

PRESENTS

World  
Science  
Festival  
Brisbane

**IT'S LIVE!**  
*in Queensland*

TEACHER RESOURCE  
YEARS 7-8  
OBSERVING SPECIES



FEATURING

**CIRI CITY**  
BRISBANE

**brisbane**  
ECONOMIC DEVELOPMENT AGENCY

QUEENSLAND  
**MUSEUM**  
NETWORK

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Cover: Brian Robinson, *Baidam Tithuyil*, 2022.  
[artist mock-up in situ].

## ART VS. SCIENCE

STEM-literacy is fundamental in a world increasingly saturated with advertising and mixed messages from the media. Having basic scientific literacy helps us to navigate some very practical questions, like: how can we trust vaccines, should we use energy-saving lightbulbs, and why is it important to be healthy?

Science should be shared with everyone, in an accessible and clear manner. Why is this important? Well, it gives us a sense of wonder and curiosity, encourages us to find better ways of doing things, and it help us look after ourselves and our planet.

One way of making science accessible, is by presenting it in creative ways, like the artists who participated in [Curiosity Brisbane 2022](#). As you engage with these public artworks, what will you discover about science, about yourself, or about the state of the planet?

## OBSERVING SPECIES

Our natural environment has inspired countless works of art, from the classical compositions of Beethoven and Vivaldi to the spectacular masterpieces of Claude Monet and Vincent Van Gogh. And just like artists, scientists, including Australia's First Scientists, continue to solve problems by finding new ways of looking.

Sometimes, we just need a shift in perspective. Or a creative new twist. We might discover things that are too small to see with the naked eye, or brilliant things that have existed for aeons before humans dug them up or cut them open.

Can you make new connections between scientific inquiry, storytelling, and art? We can't wait to see the results.

## FEATURED ARTWORKS

Brian Robinson. *Baidam Tithuyil*

## CURRICULUM LINKS

This resource is aligned with [Australian Curriculum](#)<sup>i</sup>, Visual Arts, Years 7-8 and includes reference to [Australian Curriculum](#)<sup>ii</sup>, Science, Years 7-8.



- 1 Acknowledging Place**  
Carol McGregor
- 2 Soft-body Adapters**  
Kellie O'Dempsey
- 3 CURIOCIITY EcosysTEAMs**  
Dalby South State School
- 4 TIMEE22**  
Isis District State High School
- 5 Luminous Threads**  
Kirsten Baade
- 6 CurioCreatures**  
Alinta Krauth and Jason Nelson (EphemerLab)  
**TRAIL** Collect all 15 across South Bank, the Goodwill Bridge and Queen Street Mall
- 7 City Symphony**  
QMF and Textile Audio  
**TRAIL** Visit all four sites across South Bank and Brisbane CBD
- 8 Self-talk is our superpower!**  
Blackall Range Independent School
- 9 Cooyinnirra in Flames**  
Boonah State High School
- 10 93% Human / Breathwork**  
Helen Pynor
- 11 Baidam Tithuyil**  
Brian Robinson
- 12 In the Air**  
Priscilla Bracks & Gavin Sade  
(Music: Greg Jenkins and Gavin Sade)
- 13 AmphiSonic**  
Panos Couros
- 14 The Wandering Birds Have Returned to the River (Even Bernice)**  
Seth Ellis and Michelle Vine  
Guest creators Lota State High School
- 15 The Origins of Art I and II**  
Maria-Fernanda Cardoso
- 15 DE-CAY-dence**  
Donna Davis
- 15 Communing With Robots**  
Peter Thiedeke
- 16 Sounding Tides**  
Erik Griswold and Rebecca Cunningham
- 17 OHCE/ECHO**  
Georgie Pinn  
Guest creators MacGregor State High School
- 18 MIRAGE PROJECT [iceberg]**  
David Burrows and Australian Antarctic Program  
**TRAIL** Visit all 10 locations throughout Streets Beach

### Wednesday 9 – Sunday 13 March

- 19 Dinosaur Discovery**  
Presented with Brisbane Urban Environmental Education Centre
- 19 Reef Creature Coding Challenge**  
Presented with Great Barrier Reef Marine Park Authority
- 20 Protect Our Coral Reefs**  
Presented with CoralWatch
- 21 Stellar STEM**  
Presented with PFi Aerospace
- 21 Coding with CodeMonkey**  
Presented with Junior Engineers
- 21 Energy in Motion – STELR Program**  
Presented with Australian Academy of Technological Sciences and Engineering

### Saturday 12 – Sunday 13 March

- 24 It's Rocket Science**  
Presented with It's Rocket Science
- 24 Stargazing**  
Presented with Brisbane Astronomical Society
- 25 Marble Run Madness**  
Presented with Make & Meld
- 26 ImmunoKru: A Cancer Art Gallery Exclusive**  
Presented with Excite Science
- 26 Butterflies, Bees and Other Insects**  
Presented with Butterfly & Other Invertebrates Club Inc.
- 26 Fungi Count**  
Presented with FungiMap and QuestaGame
- 26 Addiction Neuroscience and Obesity**  
Presented with Translational Research Institute
- 26 Science for Citizens**  
Presented with Australian Citizen Science Association
- 26 Radiation Exploration**  
Presented with Queensland branch of the Australasian Radiation Protection Society
- 26 Beneath the Streets**  
Presented with Urban Utilities
- 27 Race to Escape**  
Presented with Robogals Brisbane
- 27 The Young Entrepreneurs Hub**  
Presented with BOP Industries

- 21 Science of Tunnelling and Future Brisbane**  
Presented with Cross River Rail Delivery Authority
- 22 Design and Fly a Virtual Aircraft**  
Presented with Cool Aeronautics Australia
- 22 Professor Tech's Awesome Introduction to Extended Reality**  
Presented with The Create Lab by Professor Tech
- 23 Micromelon Robotics Automation Challenge**  
Presented with Micromelon Robotics
- 23 Innovation in Science Ideation**  
Presented with Australian School of Entrepreneurship
- 23 Become a Young Scientist**  
Presented with The University of Queensland

- 27 Achieving a Circular Economy**  
Presented with Steam Powered Kids
- 27 Augmented Reality Games**  
Presented with Ardacious
- 27 Robotics**  
Presented with Young Engineers Brisbane North
- 27 Catchment Curiosities**  
Presented with Brisbane Catchments Network
- 27 The Science of Movement**  
Presented with Australian Catholic University
- 27 Finding Ink the Famous Octopus!**  
Presented with Plastic Oceans Australasia
- 27 The Future of Health**  
Presented with QIMR Berghofer
- 28 Get Buried!**  
Presented with LUSY
- 28 Soil: Life's Foundation**  
Presented with Soil Science Australia, Queensland Branch
- 28 Understanding Earth Science**  
Presented with Geological Society of Australia
- 28 Building Sustainable and Biodiverse Gardens**  
Presented with Natura Pacific Pty Ltd

- i1 Information Tent**
- i2 Information Tent**
- i3 Information Tent**

## CONTENT DESCRIPTIONS

<b>Visual Arts, Years 7 and 8</b>	
ACAVAM118	Experiment with visual arts conventions and techniques, including exploration of techniques used by Aboriginal and Torres Strait Islander artists, to represent a theme, concept or idea in their artwork
ACAVAM119	Develop ways to enhance their intentions as artists through exploration of how artists use materials, techniques, technologies and processes
ACAVAM120	Develop planning skills for art-making by exploring techniques and processes used by different artists
ACAVAM121	Practise techniques and processes to enhance representation of ideas in their art-making
ACAVAM122	Present artwork demonstrating consideration of how the artwork is displayed to enhance the artist's intention to an audience
ACAVAR123	Analyse how artists use visual conventions in artworks
ACAVAR124	Identify and connect specific features and purposes of visual artworks from contemporary and past times to explore viewpoints and enrich their art-making, starting with Australian artworks including those of Aboriginal and Torres Strait Islander Peoples

## STEM LINKS

<b>Science, Years 7 and 8</b>	
ACSSU115	Predictable phenomena on Earth, including seasons and eclipses, are caused by the relative positions of the sun, Earth and the moon
ACSHE119, ACSHE134	Scientific knowledge has changed peoples' understanding of the world and is refined as new evidence becomes available
ACSHE223, ACSHE226	Science knowledge can develop through collaboration across the disciplines of science and the contributions of people from a range of cultures
AC SIS129, ACSUS144	Construct and use a range of representations, including graphs, keys and models to represent and analyse patterns or relationships in data using digital technologies as appropriate
AC SIS133, AC SIS148	Communicate ideas, findings and evidence based solutions to problems using scientific language, and representations, using digital technologies as appropriate

# GENERAL CAPABILITIES

Knowledge, skills, behaviours and dispositions:



intercultural understanding



critical and creative thinking



literacy



personal and social capability



Aboriginal and Torres Strait Islander  
histories and cultures

# LEARNING OBJECTIVES

Students are learning:

- to explore and experiment with various media, using the elements and principles of art
- how artists use visual language to communicate knowledge and histories
- to evaluate artworks from different cultures, times and places
- to identify the influences of science, culture and environment on their own and others' artworks
- to develop and refine techniques and processes to represent ideas and subject matter in their artworks

# SUCCESS CRITERIA

Students will be successful when they can:

- demonstrate development and refinement of art techniques and processes
- identify and analyse how they and other artists use visual conventions and viewpoints to communicate information
- evaluate the influence of different cultures, times and places on artworks
- plan their art making in response to exploration of scientific, cultural and environmental factors
- demonstrate manipulation of techniques and processes to represent intended ideas and subject matter in their artwork.

# TEACHING NOTES

## TIMING

3 x 1-hour sessions

## MATERIALS

- each student will need a HB pencil, waterproof black liner (*Sharpie* or similar), block of soft lino (at least 15x15cm each student, although they may prefer to work using a rectangular format)
- for the class: A4 printing paper, lino cutting tools, palette knives, printing ink (various colours, at least two), ink rollers, printing press or barren/ large spoon/clean printing rollers, masking tape, A4 plastic sheets (old, laminated posters or handouts and overhead transparencies, etc. work well), newspaper. Optional: transfer paper, fine white or pastel paint pens
- devices and internet access, printer and photocopy machine

## HOW TO USE

Students view featured artworks in situ, prior to completing these activities. Activities can be modified for remote learning.

To enrich this experience, Queensland Museum [learning resources](#) may be used concurrently in other learning areas. Creating a free account means you can save, sort, manage and share your favourite collection items (audio and video, collection items, events, fact sheets, images, learning resources, loan kits, etc.).

### Suggested resources:

- [Torres Strait Island Futures: What Lies Ahead for Zenadth Kes?](#) – free exhibition runs until 25 April, 2022 (comprehensive resources covering various year levels and learning areas)
- [Australians and the Sky: Learning Resource](#) (Science, Years 5, 7)

# LEARNING ACTIVITIES

## LESSON 1: THE FIRST SCIENTISTS

*For more than 50,000 years, Indigenous Australians have incorporated celestial events into their oral traditions and used the motions of celestial bodies for navigation, time-keeping, food economics, and social structure... Aboriginal people made careful observations of the sky, measurements of celestial bodies, and incorporated astronomical events into complex oral traditions by searching for written records of time-keeping using celestial bodies, the use of rising and setting stars as indicators of special events, recorded observations of variable stars, the solar cycle, and lunar phases (including ocean tides and eclipses) in oral tradition, as well as astronomical measurements of the equinox, solstice, and cardinal points.<sup>iii</sup>*

While students take inspiration from Brian Robinson's work to imagine their own constellations and animal stories, they do so respectfully. They understand that artists who are Aboriginal Peoples or Torres Strait Island Peoples are the Traditional Owners and primary guardians of these stories and heritage.

### Inquiry question

- How do scientific, cultural and environmental influences shape an artist's work?

### Preparation

- Print a class set of [Appendix A: Design table](#), preferably on A3 paper to allow students room to sketch.

### Introductory activity

- Project a still-image or footage of Brian Robinson's *Baidum Tithuyil*, so that students can recollect their experience with the work as they enter the classroom.
- Allow students 10 minutes to silently read Robinson's artistic concept. Once they have finished reading, students work in small groups to respond to the following questions:
  - o What techniques, materials and styles has Robinson used that reflect traditions and styles of the Torres Strait?

- o What techniques, materials and styles show influence of Western art or popular culture?
- o What symbols, motifs, patterns or lines reflect the tropical marine environment surrounding Waiben (Thursday Island)?
- o What do you think Robinson was trying to communicate with this artwork?
- o What was something you found interesting or exciting about the artwork?
- o What is a question you have now?
- Students elect a representative from their group to share their responses with the class.

### Learning activities

- Taking inspiration from Robinson's representation of the Great Shark, students will design their own Australian animal constellation, with the following specifications:
  - o simplify shape and line work, so the design is suitable for printmaking
  - o the design represents a food chain – the feature animal and outline must be a second or third order consumer, and the first order consumer and producer are depicted inside of the feature animal
  - o the design includes a symbol that represents where the stars are in the constellation (Robinson uses an orange, circular motif)
  - o **Extension:** consider adding parasite-host, threats/competitors or pollinators to your design.



# LEARNING ACTIVITIES

- Students can find many examples of animals within a food-web in this Queensland Museum resource, [Exploring Australian Food Webs](#). Food webs encompass multiple food chains that exist within an ecosystem.
- To begin the design process, students complete the design table. Demonstrate how to simplify animal and plant shapes so that they will result in achievable designs.
- Using a blank page in their visual diary, students add the elements together to draw a design for a linocut. The third or second order consumer should be the largest, external shape, and other elements should be composed within this shape. Make sure that the stars that make up the constellation are included in the design (constellation shapes are often quite abstract, so students can be creative with their placement, using known constellations as stimulus).
- **Extension:** consider animal or plant species that are under threat, or prolific (a pest). Use repetition or scale to communicate these environmental concerns.
- Assist students as they work, encouraging them to consider the overall composition and their use of bold lines, negative space and simple, recognisable shapes and patterns (aim for a balance of black and white shapes and lines in the design). Robinson has many existing artworks (including linocuts) that could be used as striking examples of successful designs.

# LEARNING ACTIVITIES

## LESSON 2: DESIGNING CONSTELLATIONS

### Inquiry question

- How do artists represent ideas through visual conventions?

### Preparation

- Access to a photocopier to produce mirror-image copies
- Prepare transfer paper, black liners, lino blocks and lino cutting tools for each student.

### Learning activities

- Students complete a design which is suitable for a linocut. *Note: expect that the process of cutting and printing may require several lessons to complete.*
- Give each student the opportunity to share their linocut designs (show scale drawing, explain the food chain represented and the chosen features). Invite classmates to engage in TAG peer feedback (feedback could also be given using colour-coordinated post-it notes or via digital/online comment).
  - o T – tell your classmate something you like about the artwork
  - o A – ask for clarity about something
  - o G – give a suggestion
- Students use peer and teacher feedback to make any amendments to their designs.
- When designs are completed, demonstrate how to:
  - o photocopy a mirror-image of the design so that prints appear the intended way (linocut work just like a stamp). You could also use the transfer paper or another technique to transfer the mirror-image onto the lino.
  - o use transfer paper to copy the design onto the lino and then trace with a waterproof liner to make sure the image doesn't smudge or rub off as you work.

- o safely use lino cutting tools, always selecting a sharp tool and cutting away from yourself to avoid injury.
  - o use various cutting tools for their intended purpose (e.g., 'V' gouge tools for cutting lines, 'U' gouge tools for removing large areas of non-printing lino).
  - o create and use circular dots, stippling or cross-hatching to communicate form or value.
- Assist students to complete cutting their design.

# LEARNING ACTIVITIES

## LESSON 3: PRINTING CONSTELLATIONS

### Inquiry question

- How does scientific knowledge impact on artworks and communication of meaning?

### Preparation

- Prepare multiple workstations in the classroom so that inking, printing and drying processes are separate (to avoid transferring ink onto unwanted surfaces).
  - o Inking: attach plastic sheets to the table with masking tape to make an area to roll out the ink (plastic can be easily cleaned or thrown away afterwards). Prepare inks, ink rollers, palette knives, newspaper
  - o Printing: clean A4 printing paper, newspaper, printing press or barren/large spoon/clean printing rollers
  - o Drying: a draft-free space where prints can dry undisturbed (i.e., drying rack)




### Learning activities

- Demonstrate how to roll an appropriate amount of ink out onto the prepared surface and how to use the palette knife to remove excess ink or add more.
- Extension: ask students to roll their own ink or use multiple colours to create a gradient.
- Demonstrate the following printing processes:
  - o evenly apply an appropriate amount of ink, so that there is a velvety sheen
  - o work quickly so that the ink does not dry out
  - o create intrigue or tone by rubbing ink away from flat areas with newspaper
  - o use light pencil marks to ensure your print is registered (lined up)
  - o work in the correct station, and keep hands free of ink to avoid smudges
  - o peel the paper from the lino carefully

- o apply the right amount of pressure so that the result is an evenly transferred print.
- Students compose their prints onto the A4 paper, create an edition (series) of successful prints and number them.
- **Extension activity:** when the prints are dry, students work over the top of them using fine, white or pastel coloured paint pens – emphasising the constellation reference.
- Finished work can be mounted and displayed in the classroom.
- Students complete a short paragraph, reflecting on the food chain represented, the process involved and the effectiveness of the finished result.

# APPENDICES

## APPENDIX A: DESIGN TABLE

TROPIC	What is it?	Simplified Drawing
<b>Feature animal (third order consumer)</b>		
<b>Second order consumer</b>		
<b>First order consumer</b>		
<b>Producer (a plant)</b>		
<b>Additional elements</b>		

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## ENDNOTES

- <sup>i</sup> Australian Curriculum, Assessment and Reporting Authority (ACARA). *Australian Curriculum, Visual Arts*, 2019. Australian Curriculum, Assessment and Reporting Authority (ACARA), viewed 18 June 2020, <https://www.australiancurriculum.edu.au/f-10-curriculum/the-arts/visual-arts/>
- <sup>ii</sup> Australian Curriculum, Assessment and Reporting Authority (ACARA) (2019). *Australian Curriculum, Science (Version 8.4)*, 2019. Available at: <https://www.australiancurriculum.edu.au/f-10-curriculum/science/>
- <sup>iii</sup> Hamacher, D. W., & Norris, R. P. (2011). "Bridging the gap" through Australian cultural astronomy. *Proceedings of the International Astronomical Union*, 7(S278), 282-290. doi:10.1017/S1743921311012713