



Australia's National  
Science Agency

# Blue CREST Award



## Cultural Indicators

Created in collaboration with the Narran Lakes Aboriginal Joint Management Committee and CSIRO's Drought Resilience Research.

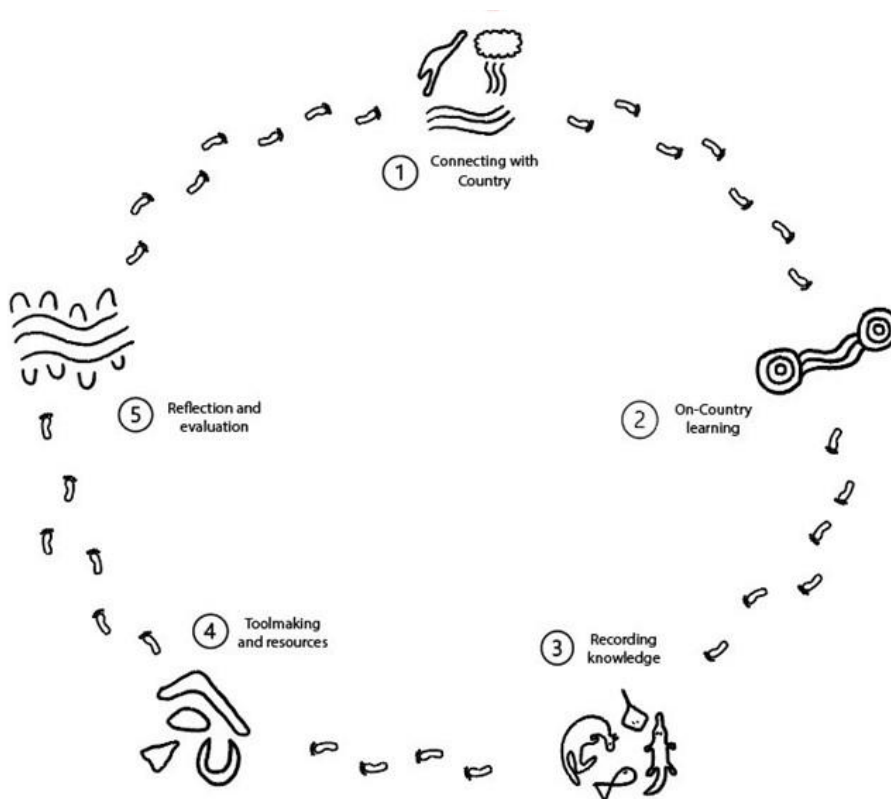
Image: Narran River, September 2024



## Blue CREST Award

### Science: Indigenous Research Methodology – Cultural Indicators

#### Background information: Indigenous Research Methodology



#### Indigenous Research Methodology<sup>1</sup>

This activity is dependent on an existing, two-way learning relationship with Community and informed consent from Community about the collection and communication of their knowledges.

Highlight to students the importance of conducting a risk assessment during the planning phase for safety considerations.

<sup>1</sup> Fabila M, Moggridge B, Braedon P, Akeroyd M, Connolly M, Court Z, Gilbey S (2025). Indigenous research methodology for drought resilience, CSIRO, Australia.

## Background information

In this inquiry, students will explore localised cultural indicators using an Indigenous Research Methodology (IRM) based on Moggridge et al. (2022)<sup>2</sup>. The active participation of the local Indigenous community defines the inquiry through ongoing collaboration, co-design and community engagement. In the absence of reciprocal, two-way relationships, consider exploring environmental cultural indicators by analysing the data found in Indigenous seasonal calendars.

Students will generate questions that they can investigate. Students will plan and carry out their investigation using the appropriate Intermediate CREST Awards Planner- Indigenous Research Methodology.

*See the IRM Teacher Resource*

## Equipment

Equipment list not provided. Students list all the items required to conduct the activity including any software and hardware. Students are responsible for considering and mitigating any safety issues.

## Context

### Engaging and Exploring

- Use the suggested resources or other stimulus to engage students in the topic.
- Provide access to the Indigenous Research Methodology video and teacher notes.
- Facilitate students to generate questions using the strategies outlined in the CREST Snapshot: Finding questions.
- Students use the appropriate Intermediate CREST Awards Planner- Indigenous Research Methodology to plan their investigation, including conducting a risk assessment. A template for the risk assessment is in the planner.

### Explaining

Students work their way through the Intermediate CREST Award Planner: Indigenous Research Methodology to explain what their investigation is about.

---

<sup>2</sup> Moggridge, BJ, Thompson, RM, & Radoll, P (2022) 'Indigenous research methodologies in water management: learning from Australia and New Zealand for application on Kamilaroi country,' *Wetlands Ecology and Management*, 30(4): 853–868, doi: 10.1007/s11273-022-09866-4

### Investigating

Students conduct their investigation/design work as planned and approved by the teacher in the Intermediate CREST Award Planner: Indigenous Research Methodology. Making sure they have adequate support to connect with community and are conducting a fair test.

### Elaborating

Students work their way through Intermediate CREST Award Planner: Indigenous Research Methodology to explain their results.

### Evaluating the Investigation

Students work their way through the Intermediate CREST Award Planner: Indigenous Research Methodology to evaluate their investigation/design, relate their results back to their investigation/design aim and report back to Community.

## Teacher Background Information

Aboriginal and Torres Strait Islander (Indigenous) Peoples are Australia's first scientists. For tens of thousands of years, Indigenous Peoples have observed, studied and created understandings of the relationships and landscapes of the Australian continent. Indigenous knowledge systems flow through over 250 unique languages, cultures and family systems. Each cultural group holds knowledge consisting of thousands of generations of observations and governance of the lands, waters, seas and skies that belong to, and are encoded in their Country. Indigenous data and knowledge are often encoded in stories and art, effective strategies for memorising, recalling and sharing detailed observational data over long time periods<sup>3</sup>.

Indigenous knowledge systems, capability and lived experience offer unique and essential understandings of Country, which are increasingly being recognised in Western scientific approaches and institutions. Indigenous Peoples have developed holistic sets of cultural indicators to understand, care for and manage the diverse Country of the Australian continent. Recognising and embracing Indigenous cultural indicators and Indigenous ways of knowing, being and doing is crucial for fostering innovative and practical action solutions and responses that strengthen drought resilience.

---

<sup>3</sup> Reser, D., Simmons, M., Johns, E., Quayle, M., Dordevic, A. L., Tare, M., . . . Yunkaporta, T. (2021). Australian Aboriginal techniques for memorization: Translation into a medical and allied health education setting. PLoS ONE, 1–17.

The Drought Resilience project team define a cultural indicator as:

*“A cultural indicator refers to the accumulation of different knowledge systems, events and observations that have been experienced and passed down through story, song and dance detailing the different natural processes to infer or to deduce other natural processes that may be occurring at the same time or of similar timing of the observed natural process. These observations may signal a cultural event (ceremony) is about to begin/end or depending on cultural landscape it may indicate that it is time to move camp.*

*These observations may include seasonal changes, climate changes, time to undertake cultural burns, climatic/weather events (wind change, rains, storms), flowering/fruitletting/seedling times of Indigenous Foods, arrival of migrating species, emergence of species (insect, animal or bird), reproduction/spawning times of animals and fish, hunting and navigating by the stars, cultural astronomy, what star constellations are present and moon phases.”<sup>4</sup>*

In this inquiry, students will use the Indigenous Research Methodology (IRM) based on Moggridge et al. (2022) to implement an Indigenous way of knowing, being and doing, to investigate cultural indicators. They will create a baseline measure of the selected environmental change or indicator.

## Additional resources

- [Free Indigenous Curriculum Resources | Ngarrngga | Ngarrngga](#)
- [Aboriginal water values and management in northern Australia](#)
- [Ngaparrtji Ngaparrtji Two-way Science | Education Resources](#)

## Videos

Dharriwaa Living with Climate Change videos

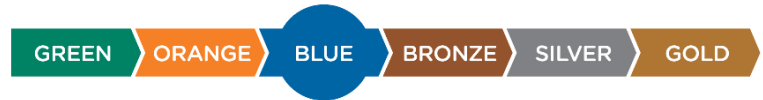
- [Part 1 - Dharriwaa living with climate change](#)
- [Part 2 - Dharriwaa Living with climate change](#)
- [Part 3 - Dharriwaa living with climate change](#)

## CSIRO Science Links

- [Indigenous Research Methodology for drought resilience - CSIRO](#)
- [Sharing knowledge of drought resilience on Country - CSIRO](#)
- [Cultural indicators for drought resilience - CSIRO](#)
- [Indigenous seasonal calendars - CSIRO](#)

---

<sup>4</sup> Fabila M, Moggridge B, Braedon P, Akeroyd M, Connolly M, Court Z, Gilbey S (2025). Indigenous research methodology for drought resilience, CSIRO, Australia.



## Professional Development

- [8 Aboriginal Ways of Learning](#)
- [Narragunnawali - Caring for Country](#)
- [Professional Development for Educators | Ngarrngga | Ngarrngga](#)
- [Narragunnawali - A Matter of Perspective](#)