

# DTiF

Digital Technologies in focus

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ASSESSMENT AND  
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## CLASSROOM IDEAS: YEARS F–10

### Aboriginal and Torres Strait Islander connections to Digital Technologies

*Warning: Aboriginal and Torres Strait Islander readers are advised that this document may contain images and names of deceased persons.*



Figure 1: Australian bush foods and plants are collected and categorised by Aboriginal people according to their purpose.

Source: [pen\\_ash from Pixabay](#)



Figure 2: WA Wangkatja Elders discuss ways to sort and categorise local plants. Source: David Broun, CSIRO Science Pathways for Indigenous Communities

Aboriginal and Torres Strait Islander Histories and Cultures is a [cross-curriculum priority](#) in the Australian Curriculum. For each cross-curriculum priority, a set of [organising ideas](#) reflects the essential knowledge, understandings and skills for the priority.

The organising ideas are embedded in the content descriptions and elaborations of each learning area as appropriate. For example, in Year 3 Science, students learn about how living things can be grouped on the basis of observable features and can be distinguished from non-living things (ACSSU044). Collecting, representing and interpreting data are also key concepts in the Digital Technologies curriculum.

#### Classifying and sorting data

For millennia, Aboriginal and Torres Strait Islander Peoples have used observable features of organisms to classify and group organisms and distinguish living and non-living things.

Through Digital Technologies and Science elaborations, students can be given opportunities to investigate Aboriginal and Torres Strait Islander Peoples' systems of classifying living things based on observations of features or behaviours of organisms. These are ways of classifying organisms that differ from western science. Such classification systems reflect long-held cultural, scientific and practical understandings of the complex interrelationships of organisms within an environment.

In learning more about the various systems of classification used by Australia's First Nations Peoples, students can compare and contrast these with methods used in western science as well as how this relates to building knowledge and understanding in Digital Technologies where data collection, interpretation and representation are key concepts.



Figure 3: Leonora students sorted and classified data about the seasons in their local area.



Figure 4: Noongar Aboriginal seasons expressed through data classification. Local plants and animals are represented in the season they are most plentiful.



Figure 5: Two ACARA DTIF staff, teachers from Leonora District High School WA and Wangkatja Elders discuss ways to sort and categorise local plants. Source: David Broun, CSIRO Science Pathways for Indigenous Communities

In many of the classification systems of Aboriginal Peoples, organisms are grouped based on function and use. For example, the classification of wood-bearing plants may have the same name as the function of the finished object such as spear trees, string trees, shield trees, canoe trees or resin trees. In other function-based classifications, organisms may be placed in a group identified as material for use in the construction of tools or implements.

The Gurindji Peoples of the Victoria River region in the Northern Territory group the three main types of wattle that are found in the area collectively as *parrawi*. The straight sections of the *parrawi* are used to make small spears. The Pitta Pitta Peoples of the Boullia region of Queensland classify the tree *Erythrina vespertilio* and shields constructed from it as *koon-pa-ra*.

Adapted from:

[www.australiancurriculum.edu.au/TeacherBackgroundInfo?id=56592](http://www.australiancurriculum.edu.au/TeacherBackgroundInfo?id=56592)

Some of the linked content descriptions in the Australian Curriculum are:

- Digital Technologies: Recognise different types of data and explore how the same data can be represented in different ways (ACTDIK008) (Figures 3, 4 and 5)
- Science: 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 SIS129)

#### Related links

- Australian National Botanic Gardens Aboriginal plant use in south-eastern Australia resource [www.parksaustralia.gov.au/botanic-gardens/pub/anbg\\_educationresources\\_aboriginalplantuse\\_150802.pdf](http://www.parksaustralia.gov.au/botanic-gardens/pub/anbg_educationresources_aboriginalplantuse_150802.pdf)
- Noongar Stories from Forrestdale Lake, West Australia [www.vimeo.com/111765961](http://www.vimeo.com/111765961)
- *Young Dark Emu* by Bruce Pascoe [www.magabala.com/young-dark-emu.html](http://www.magabala.com/young-dark-emu.html)
- Bureau of Meteorology Indigenous weather knowledge [www.bom.gov.au/iwk/index.shtml](http://www.bom.gov.au/iwk/index.shtml) and creating a seasonal calendar toolkit [www.bom.gov.au/iwk/indigenous\\_weather\\_knowledge\\_toolkit.pdf](http://www.bom.gov.au/iwk/indigenous_weather_knowledge_toolkit.pdf)

- CSIRO Indigenous seasons calendars [www.csiro.au/en/Research/Environment/Land-management/Indigenous/Indigenous-calendars](http://www.csiro.au/en/Research/Environment/Land-management/Indigenous/Indigenous-calendars)
- Atlas of Living Australia Indigenous fire and season calendar [www.ala.org.au/blogs-news/banbai-nation-community-season-and-fire-calendars/](http://www.ala.org.au/blogs-news/banbai-nation-community-season-and-fire-calendars/) and ALA's Indigenous Ecological Knowledge (IEK) program [www.ala.org.au/indigenous-ecological-knowledge/](http://www.ala.org.au/indigenous-ecological-knowledge/)

## Designing solutions

The Australian Curriculum: Technologies aims to teach students to design solutions to meet personal and community needs. There are many examples of designed, built and crafted solutions in Aboriginal and Torres Strait Islander Histories and Cultures that provide strong links to STEM, Design and Technologies and Digital Technologies.

For example, the Australian Curriculum illustration of practice ‘What do a humanoid robot and the recently awakened Narungga language have in common?’ shows how students are engaging with local language through programming a robot [www.tinyurl.com/y5fhkazx](http://www.tinyurl.com/y5fhkazx) (Figures 6 and 7).

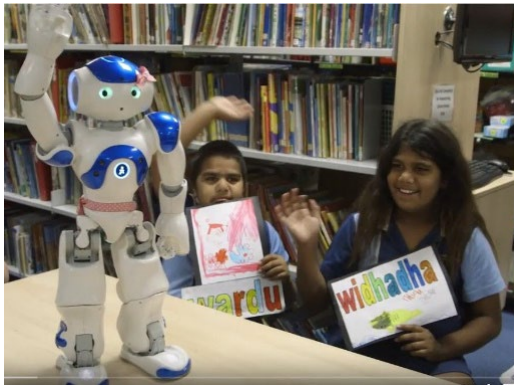


Figure 6: Students from Maitland Lutheran School with Pink the robot

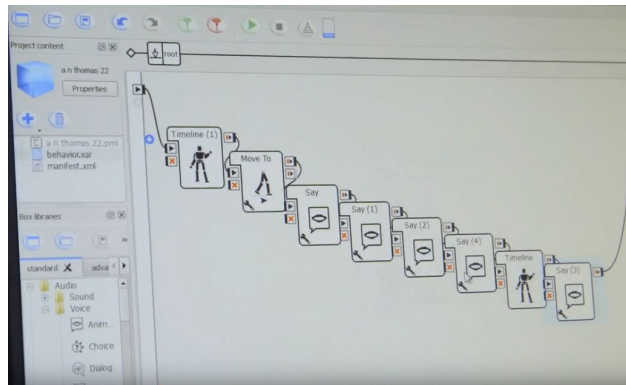


Figure 7: Student example of visual programming. This algorithm is to make the robot walk and talk in Narungga.

There are also links to key ideas such as computational thinking and concepts such as algorithms and data collection, representation and interpretation. Students could explore how Aboriginal and Torres Strait Islander Peoples use these ideas and concepts in sustaining environments, histories, cultures, identities and languages through and by creating appropriate and sustainable solutions.

Students could investigate:

- Why is classifying, sorting and organising data important in Aboriginal and Torres Strait Islander cultures?
- In what forms are data collected and represented in Aboriginal and Torres Strait Islander cultures? How have/are data stored, passed on and interpreted?
- What kind of processes or steps and sequences (algorithms) have been/are important to Aboriginal and Torres Strait Islander Peoples in the area where you live or learn? Which Elder or group could you connect with to find out more about this?
- What kinds of data have been/are collected by Aboriginal and Torres Strait Islander peoples? Investigate ethical practices and protocols for collecting or using data (cultural knowledge) if you are not part of the same cultural group.
- How might Aboriginal and Torres Strait Islander perspectives influence the design of a game or app to be more inclusive of different perspectives?
- What part do digital technologies play in the work of Brett Leavy in creating the VR app, Virtual Songlines [www.virtualsonglines.org](http://www.virtualsonglines.org) and Mikaela Jade in developing the Indigital app [www.indigital.net.au](http://www.indigital.net.au)?
- What roles can digital technologies play in preserving, sustaining and even reviving Aboriginal and Torres Strait Islander peoples' histories and cultures?
- How are digital technologies being used by Indigenous rangers in areas of land management and environmental conservation and the Aboriginal and Torres Strait Islander culture notion of caring for Country/Place.
- How have some of the top Indigenous technology entrepreneurs used design, systems and computational thinking to develop solutions in their chosen fields?

## Australian Curriculum resources

### Cross-curriculum priorities: Aboriginal and Torres Strait Islander Histories and Cultures

Aboriginal and Torres Strait Islander Histories and Cultures can be related to multiple content descriptions in the Australian Curriculum: Digital Technologies depending on what is being taught. The book *Two-Way Science: an integrated learning program for Aboriginal desert schools* (2019, CSIRO Publishing) gives many examples [www.publish.csiro.au/book/7949](http://www.publish.csiro.au/book/7949).



Figure 8: A visual algorithm depicting Tiwi Islands cultural bark basket making. This panel appears at the Patakijiyali Museum, Bathurst Island, Northern Territory, and is published with kind permission of the photographer, Tess Ward, and Warlapijimayuwu Ancilla Kurrupuwu, whose mother, Sidonia Lapirrayatimawu Munkara, is pictured as the maker of the tunga and wangatunga.

### Useful links

- Australian Curriculum Aboriginal and Torres Strait Islander Histories and Cultures cross-curriculum priority information [www.australiancurriculum.edu.au/f-10-curriculum/cross-curriculum-priorities/aboriginal-and-torres-strait-islander-histories-and-cultures/](http://www.australiancurriculum.edu.au/f-10-curriculum/cross-curriculum-priorities/aboriginal-and-torres-strait-islander-histories-and-cultures/)
- Australian Curriculum illustrations of practice [www.australiancurriculum.edu.au/resources/aboriginal-and-torres-strait-islander-histories-and-cultures/illustrations-of-practice/](http://www.australiancurriculum.edu.au/resources/aboriginal-and-torres-strait-islander-histories-and-cultures/illustrations-of-practice/)
- Australian Curriculum: Science Aboriginal and Torres Strait Islander Histories and Cultures cross-curriculum priority content elaborations and teacher background information for F–6 [www.australiancurriculum.edu.au/media/5653/ccp-tbi-f-6-ver5-online.pdf](http://www.australiancurriculum.edu.au/media/5653/ccp-tbi-f-6-ver5-online.pdf)
- Australian Curriculum: Science Aboriginal and Torres Strait Islander Histories and Cultures cross-curriculum priority content elaborations and teacher background information for Years 7–10 [www.australiancurriculum.edu.au/media/5157/ccp-tbi-7-10.pdf](http://www.australiancurriculum.edu.au/media/5157/ccp-tbi-7-10.pdf) (see pages 50 and 85)

### Make connections

There are many groups and organisations that schools can contact to learn more about the connections between Digital Technologies/other learning areas and Aboriginal and Torres Strait Islander Histories and Cultures. These might include members of your parent community, the local Aboriginal land council or an Aboriginal education officer from the CSIRO or other organisation.

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