

Resource Guide

Technologies— Design & Technologies and Digital Technologies

The information and resources contained in this guide provide a platform for teachers and educators to consider how to effectively embed important ideas around reconciliation, and Aboriginal and Torres Strait Islander histories, cultures and contributions, within the specific subject/learning areas of [Technologies—Design and Technologies](#) and [Technologies—Digital Technologies](#). Please note that this guide is neither prescriptive nor exhaustive, and that teaching staff are encouraged to consult with their local Aboriginal and Torres Strait Islander community in engaging with the material contained in the guide.

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Please be aware this guide may contain references to names and works of Aboriginal and Torres Strait Islander people that are now deceased. External links may also include names and images of those who are now deceased.

Background and Introduction to Aboriginal and Torres Strait Islander Technologies

“Indigenous people are among the most innovative people in the world, and we do use complex technology, and we are able to lead in this space of digital technology,” – Michaela Jade, Aboriginal digital designer

It is important to appreciate that, while this guide focuses as much on Aboriginal and Torres Strait Islander technologies since colonisation, technologies have been an integral part of Aboriginal and Torres Strait Islander cultures for tens of thousands of years, continuing to play an integral part in cultural life to this day. Indeed, Aboriginal and Torres Strait Islander peoples are among the world’s oldest and continually active and adaptive designers, innovators, and technicians.

For generations, Aboriginal and Torres Strait Islander technologies have incorporated, but not been limited to, sophisticated insights and innovations pertaining to [architectural/infrastructural design](#) (including the development of housing ranging from simple dome shelters to complex stone engineering, and the construction of practical transportation devices such as [bark canoes](#)); the production and use of tools, instruments and weaponry (including even the [world’s oldest stone axe](#)); and environmentally responsive food technologies (including efficient and sustainable [fishing techniques](#) and effective cooking conventions such as [earth ovens](#)).

In the postcolonial context, Aboriginal and Torres Strait Islander designers, innovators and technicians have also resiliently and responsively entered the digital sphere, indeed drawing on the potential of digital technologies to support aspects of cultural life that suffered significantly under oppressive colonial government policies. For example, a number of digital databases and apps have emerged to support the documentation and revitalisation of critically endangered Aboriginal and Torres Strait Islander languages, and a wide range of digital media and storytelling platforms have proliferated online to help to sustain the intergenerational transmission of important cultural knowledges and narratives. Many Aboriginal and Torres Strait Islander people, such as Aboriginal and Torres Strait Islander digital media and visual artists, have also enjoyed innovating or meaningfully appropriating digital technologies for creative or aesthetic reasons. It thus becomes clear that, contrary to colonial prejudices which too often propagated a myth that Aboriginal and Torres Strait Islander technologies were “primitive” or “less than,” Aboriginal and Torres Strait Islander technologies always have been, and continued to be, highly diverse, well-designed, and dynamic.

In engaging with some of the resources referenced throughout the remainder of this guide, remember to consider their great relevance to the future of Design and Technologies and Digital Technologies education; to other Subject/Learning Areas which the Aboriginal and Torres Strait Islander technologies of the past, present and future can effectively help to support; and to reconciliation in education more broadly.

Timeline of Key Dates in the Contemporary History of Aboriginal and Torres Strait Islander Technologies

This timeline chronologically lists some of the key dates in the more recent history of Aboriginal and Torres Strait Islander technologies and/or in regard to the relationship between technologies and reconciliation more generally.

- **60,000+ years ago:**
 - Aboriginal and Torres Strait Islander communities across Australia have maintained longstanding conventions and conceptualisations pertaining to technologies for tens of thousands of years.
- **1909:**
 - By 1909, Aboriginal inventor, [David Unaipon](#), had developed and patented a modified handpiece for shearing. Between this year, and 1944, he made patent applications for nine other inventions, including a centrifugal motor, a multi-radial wheel and a mechanical propulsion device, building his reputation as “Australia’s Leonardo da Vinci”.
- **1974:**
 - Despite historical inequalities and inequities experienced by Aboriginal and Torres Strait Islander students in mainstream Australian education systems, Sydney Technical College first began to offer technical education courses as vocational training for Aboriginal students without their School Certificate qualification. Courses in engineering trades and home science were offered, as well as classes in expression, Aboriginal cultures and industry.
- **1980:**
 - The [Centre for Appropriate Technology \(CAT\)](#) was established, growing to become a peak national Indigenous science and technology organisation.
- **1983:**
 - Balarinji is established by John and Ros Moriaty (explore the [Balarinji art and design collection](#) at the National Museum of Australia)
- **1995:**
 - Image of Aboriginal inventor, [David Unaipon](#), was first printed on the Australian \$50 note.
- **2007:**
 - The first [Puliima National Indigenous Language and Technology Forum](#)—a biennial event aimed at bringing people together from all over Australia and internationally to explore pioneering project ideas and exciting technical products and equipment that can be used in community based Aboriginal and Torres Strait Islander languages projects—was held in Newcastle, NSW.
- **2013:**
 - Supported by Telstra, [IDX](#) launched an [inaugural Indigenous Digital Agenda \(IDEA\) Summit](#) at the National Centre of Indigenous Excellence (NCIE) in Redfern.

- **2014:**
 - CSIRO launched its [Indigenous STEM Education Project](#), recognising the important contributions that Aboriginal and Torres Strait Islander peoples can make to the future of the science, technology, engineering and maths industries in Australia.

- **2016:**
 - [Archaeologists discovered part of the world's oldest axe](#) in a remote corner of the Kimberley, evidencing the longstanding ingenuity of Aboriginal and Torres Strait Islander peoples and the sophistication of Aboriginal and Torres Strait Islander design and technologies throughout history.
 - [INDIGI LAB](#) was founded with a vision to create a future where Aboriginal and Torres Strait Islander Australians are leading in science, technology and digital innovation. It also launched Australia's first Aboriginal and Torres Strait Islander Science and Technology magazine, [STREAMS IQ](#).
 - The CSIRO launched its inaugural [Indigenous STEM Awards](#).
 - The inaugural National Indigenous Digital Excellence (IDX) Awards were launched, with a mission to uncover everyday digital excellence and inspire Indigenous entrepreneurs, businesses and young people.
 - [Prime Minister Malcolm Turnbull made a commitment at the Indigenous Digital Excellence Summit to "fund the best technological solution to achieve an improvement in education outcomes."](#)

- **2017:**
 - A new Multimedia Award is included as part of the [Telstra National Aboriginal and Torres Strait Islander Art Awards](#) to recognise the contributions of Aboriginal and Torres Strait Islander digital artists.

Recently Released Aboriginal and Torres Strait Islander Technologies Resources

Organised below are a number of examples of recently produced or published Aboriginal and Torres Strait Islander technologies-related resources that can meaningfully contribute to contemporary classroom learning, and to the fields of Design and Technologies and Digital Technologies in Australia as a whole.

Design and Technologies

Film Clips

- ABC— [Behind the News: Bark Canoe](#)
- ABC News— [Aboriginals cutting edge in stone age](#)
- ABC Splash— [Boats made from different materials](#)
- ABC Splash— [Cooking food in the past and present](#)
- ABC Splash— [The challenges of growing bush foods](#)
- My Place for Teachers— [Episode 25 | Before Time: Bunda](#) (see the [Fishing](#), [Water](#), and [Snakebite](#) short clips for technologies-related content and discussions).
- SBS/NITV News— [Rare collection showcases ancient Indigenous technology](#)

Web Documents/Pages

- Australian Geographic— [Aboriginal inventions: 10 enduring innovations](#)
- Australian Government— [Australian Indigenous architecture](#)
- Australian Government— [Australian Indigenous tools and technology](#)
- Australian Museum— [Explore Indigenous Australian Objects](#) (including examples of tools, containers, fishing gear, toys etc.).
- Australian National Botanic Gardens Education Services— [Aboriginal Plant use and Technology](#)
- Catholic Education Office of WA— [Growing Enriched Cultural Knowledge in Our Schools: Tools](#)
- Carroll Go-Sam/ArchitectureAU— [Indigenous Design Paradigms](#)
- Claire Suttles/Focus Media Group— [Australia's First Builders: Aboriginal Architecture Past and Present](#)
- Department for Education and Child Development South Australia— [Aboriginal Cultural Studies: Science and Technology](#) (see the downloadable resources around shelters, string, toys, materials, choice of materials, containers, sports equipment, etc.)
- Jim Malo/Domain— [It's time to rethink how we design our cities: Indigenous architect](#)
- My Place for Teachers— [Australia in the 1770s: Science and Technology](#) (see the 'Fishing,' 'Weapons' and 'Canoe Making' tabs, for example).
- National Museum of Australia— [Aboriginal and Torres Strait Islander collection highlights](#)
- SBS/NITV— [Ancient tools stand the test of time in new exhibition](#)
- SBS/NITV— [The world's oldest axe found in Australia](#)

Digital Technologies

Film Clips

- ABC— [Behind the News: Bush Stories](#)
- ABC— [Behind the News: Young Game Designers](#)
- National Centre of Indigenous Excellence— [IDX Flint Projects 2016](#)
- SBS/NITV News— [Animation Sensation](#)

Digital Animations/Storytelling

- ABC— [Dust Echoes](#)
- ABC Open— [Gubuluk](#)
- ABC Open— [Gurangatch vs Mirragang](#)
- ABC Open— [Guulaangga, The Green Tree Frog](#)
- ABC Open— [Me and Mine](#)
- ABC Open— [Mother Tongue](#)
- ABC Splash— [Kurdarrku: The Brolga](#)
- ABC Splash— [The Dreamings from the Saltwater Country](#)
- KidsMatter— [Aboriginal animations](#)
- Monash University— [Monash Country Lines animations archive](#)
- PAW Media and Communications— [Juka Juka Emu Dreaming Warlpiri language animation](#)
- PAW Media and Communications— [Kinki, kinki, Nyarrpara kanpa yani? Warlpiri language animation](#)
- PAW Media and Communications— [My Name is Danny Warlpiri language animation](#)
- PAW Media and Communications— [Wangarla Jukurrpa animation](#)
- PAW Media and Communications— [Willowra Wardilyka Warlpiri language animation](#)
- SBS— [My Grandmother's Lingo](#)
- Sharing Stories Foundation— [Digital Storytelling](#)
- SNAICC— [Forever Learning – a digital story from Berrimba Child Care Centre](#)
- State Library of Queensland— [Virtual Books: Aboriginal and Torres Strait Islander language books](#)
- Vimeo— [Wadu Matyidi animation](#)

Digital Databases

- [Aboriginal and Torres Strait Islander Data Archive \(ATSIDA\)](#)
- [Ara Irititja](#)
- Australian Government Department of the Environment and Energy— [Australian Heritage Database](#)
- Australian Institute of Aboriginal and Torres Strait Islander Studies— [AUSTLANG Australian Indigenous Languages Database](#)
- Australian Institute of Aboriginal and Torres Strait Islander Studies— [Mura Collections Catalogue](#)

- Government of Western Australia Department of Aboriginal Affairs— [Aboriginal Site and Other Heritage Place Search](#)
- National Film and Sound Archive— [Collections: A Short History of Indigenous Filmmaking](#) (with embedded archive links to individual films and significant people)
- NSW Government Office of Environment and Heritage— [Aboriginal Heritage Information Management System](#)
- National Museum of Australia— [Aboriginal and Torres Strait Islander collection highlights](#)
- [PARADISEC](#)
- Queensland Government Department of Aboriginal and Torres Strait Islander Partnerships— [Aboriginal and Torres Strait Islander Cultural Heritage Database and Register](#)
- State Library of New South Wales— [Rediscovering Indigenous Languages: Collection Items](#)
- State Library of New South Wales— [Weemala](#)
- Victoria State Government Department of Premier and Cabinet— [Aboriginal Cultural Heritage Register and Information System](#)

Alongside the example list above, you may also wish to search the Australian Institute of Aboriginal and Torres Strait Islander Studies' list of other relevant digital [Databases and indexes](#).

Although focused more specifically on Australia's northern region, the [Audit of Indigenous Knowledge Databases in Northern Australia](#) compiled by Gary Scott from Charles Darwin University's School of Australian Indigenous Knowledge Systems may further help to highlight the different kinds of Aboriginal and Torres Strait Islander digital databases available.

Digital Maps

- ABC— [The AIATSIS map of Aboriginal Australia](#)
- Australian Institute of Aboriginal and Torres Strait Islander Studies— [AIATSIS map of Indigenous Australia](#)
- Bureau of Meteorology— [Indigenous Weather Knowledge](#) map
- First Languages Australia— [Gambay map](#) (with accompanying [Teachers' Notes](#)).
- South Australia Museum— [Tribal Boundaries in Aboriginal Australia | Norman B. Tindale](#)
- State Library of New South Wales— [Rediscovering Indigenous Languages: Community Map](#)
- State Library of Queensland— [Indigenous languages map of Queensland](#)

In engaging with these map resources, remember that many are *representations* only, and that borders and boundaries are not necessarily intended to be exact. Many languages maps, for example, indicate only the general location of larger groups of linguistic-cultural communities, which may include distinct languages within a wider language family, and indeed various dialects of a distinct language. Consider contacting your local Aboriginal and Torres Strait Islander Land Council or Language and Culture Centre in seeking information and resources around Aboriginal and Torres Strait Islander linguistic/geo-cultural maps or mapping.

Digital Media

- [Deadly Bloggers](#)
- [First Nations Telegraph](#)
- [IndigenousX](#)
- [Koori Mail](#)
- [National Indigenous Times](#)
- [New Matilda](#)
- [NITV](#)

For more resources pertaining to Aboriginal and Torres Strait Islander media more broadly, please see The Arts—Media Arts resource guide.

Smartphone apps

- Australian Institute of Aboriginal and Torres Strait Islander Studies— [AIATSIS Collections Search and Aboriginal Sydney Mobile apps](#)
- Barngarla Language Advisory Committee (BLAC) and RegenR8— [Barngarla Dictionary app](#)
- Bundiyarra – Irra Wangga Language Centre— [Wajarri Dictionary app](#)
- Charles Darwin University— [Gupapuyŋu app](#)
- First Peoples' Cultural Council— [FirstVoices languages app](#)
- Government of Western Australia Department of Parks and Wildlife— [Sharing The Dreaming app](#)
- Indigenous Consulting Group— [Trakka](#)
- Indigital— [Digital Rangers app](#)
- I-STORIES, Northern Territory Library/Disparity Games Pty Ltd— [NT Language-Anindilyakwa app](#)
- Minjilang Endangered Languages Publication project (Iwaidja Inyman)— [Ma Iwaidja language app](#)
- Mirima Council Aboriginal Corporation— [Miriwoong language app](#)
- NPY Women's Council— [Kulila! language app](#)
- Nyamba Buru Yawuru— [Yawuru ngan-ga language app](#)
- [One Road: Canning Stock Route Project app](#)
- Pathangal Languages Education Aboriginal Corporation/RegenR8— [Mutti Mutti Dictionary app](#)
- Pathangal Languages Education Aboriginal Corporation/RegenR8— [Nari Nari Dictionary app](#)
- Pathangal Languages Education Aboriginal Corporation/RegenR8— [Yitha Yitha Dictionary](#)
- Victorian Aboriginal Corporation for Languages— [iPhone apps and iPad apps](#)
- Weerianna Street Media— [Ngurrara- Australian Aboriginal Interactive Storybook](#)
- Weerianna Street Media— [Welcome to Country app](#)
- Wiradjuri Study Centre/RegenR8— [Wiradjuri Dictionary app](#)
- Wonnarua Nation Aboriginal Corporation/RegenR8— [Wonnarua Dictionary app](#)
- writingWA— [Mamang app](#)
- Yugambeh Museum— [Yugambeh Museum language app](#)

- Yuwaalaraay— [Ma Gamiliraay language app](#)

Video Gaming Technologies

- Arc Centre of Excellence for the Dynamics of Language (CoEDL) and Australian National University (ANU)— [Tjinari](#)
- Brett Levy— [Virtual Songlines](#)

Alongside the example digital technologies resources categorised above, you may also consider researching and engaging with Aboriginal and Torres Strait Islander and digital community pages such as [MGoals](#) as part of your exploration into Aboriginal and Torres Strait Islander digital technologies.

Aboriginal and Torres Strait Islander Designers, Inventors and Technologists

The lists below include some examples of Aboriginal and Torres Strait Islander designers, inventors and technicians who have played, and/or continue to play, a key role in the design and technologies and digital technologies fields. Given the interrelationship between Aboriginal and Torres Strait Islander technologies, the wider STEM field, and other subject/learning areas, you may also consider engaging with the lists of Aboriginal and Torres Strait Islander contributors included in a number of the other subject-specific resource guides.

Design and Technologies

- [Alison Page](#)
- [Andrew Lane](#)
- [David Unaipon](#)
- [Dillon Kombumerri](#)
- [Lucy Simpson](#)
- [Lyn-AI YoungMick Davis](#)
- [Rhys Thomas](#)
- [Will Morgan](#)

Digital Technologies

- [Celeste Carnegie](#)
- [David Williams](#)
- [Luke Briscoe](#)
- [Luke Pearson](#)
- [Marcus Lee](#)
- [Mikaela Jade](#)
- [Rae Johnston](#)
- [Tyson Mowarin](#)
- [Zoe Betar](#)

Aboriginal and Torres Strait Islander Technologies Organisations/Programs

Listed below are just a few examples of Aboriginal and Torres Strait Islander technologies-focused organisations or programs. You may also wish to use Supply Nation's [Indigenous Business Direct](#) search tool to locate other Aboriginal and Torres Strait Islander design and digital technologies organisations and businesses in your local area or across Australia. Furthermore, given the relationship between Aboriginal and Torres Strait Islander technologies and a range of other subject/learning areas such as Media Arts, Visual Arts, Science, and Mathematics, you may also consider to exploring the lists of organisations and programs featured in those and other subject-specific resource guides.

- [Balarinji](#)
- [Cape York Digital Network](#)
- [Carbon Creative](#)
- [Centre for Appropriate Technology \(CAT\) Ltd](#)
- [CSIRO Indigenous STEM Education Project](#)
- [First People Digital](#)
- [Gilimbaa](#)
- [Gulanga Group](#)
- [Indigenous Architecture and Design Victoria \(IADV\)](#)
- [Indigenous Digital Excellence \(IDX\)](#)
- [Indigenous Projects National \(IPN\) Technology Group](#)
- [Indigital](#)
- [IndiT](#)
- [Indij Design](#)
- [INDIGI LAB](#)
- [Ingeous Studios](#)
- [Marcus Lee Design](#)
- [Message Stick](#)
- [Nallawilli Technology](#)
- [National Aboriginal Design Agency](#)
- [Old Ways, New](#)
- [Ngakkan Nyaagu](#)
- [Onpoint 365](#)
- [STEM.I.AM](#)
- [Wingaru Education](#)

Aboriginal and Torres Strait Islander Technologies Celebrations/Events

Listed below are examples of Aboriginal and Torres Strait Islander technologies-related events and celebrations, past and present.

- CSIRO [Aboriginal and Torres Strait Islander Student STEM Achievement Awards](#)
- CSIRO [Indigenous STEM Awards](#)
- [IDX Awards](#)
- [IDX National Summit](#)
- [Puliima National Indigenous Language and Technology Forum](#)
- [Telstra National Aboriginal and Torres Strait Islander Art Awards](#) (including Multimedia Award for digital artists)

Other Online Guides/Reference Materials

- Australian Government IP Australia (2012) *Nanga Mai Arung Dream Shield: A guide to protecting designs, brands and inventions for Aboriginal and Torres Strait Islanders*, <http://www.wipo.int/edocs/lexdocs/laws/en/au/au329en.pdf>
- Indigenous Digital Excellence (2015) *A Roadmap for Building Indigenous Digital Excellence: Looking to 2030*, http://media.wix.com/ugd/850bdf_5d1502715255401a863620bd3ec9413c.pdf
- Nakata et al. (2008) *Australian Indigenous Digital Collections: First generation issues*, <https://opus.lib.uts.edu.au/bitstream/10453/19490/1/Aug%2023%20Final%20Report.pdf>
- Queensland Studies Authority (2013) *Technology Studies 2013 Teaching and Learning Resources: Aboriginal and Torres Strait Islander Perspectives*, https://www.qcaa.qld.edu.au/downloads/senior/snr_tech_studies_13_res_indigenous.pdf

Reflective Questions for Design and Technologies and Digital Technologies Staff and Students

- How have Aboriginal and Torres Strait Islander cultures and histories influenced Australian design and technologies, and digital technologies, and what active role do these cultures and histories play today?
- What is the relationship between Aboriginal and Torres Strait Islander design and technologies and Aboriginal and Torres Strait Islander digital technologies? What is the relationship between Aboriginal and Torres Strait Islander technologies, the wider STEM field, and other subject/learning areas? Why is it important to appreciate these relationships?
- Choose to research an Aboriginal and/or Torres Strait Islander designer or inventor. What is the importance of his or her contributions to design and technologies, or digital technologies, on either a local or (inter)national scale?
- Choose to research an Aboriginal and/or Torres Strait Islander technological invention or innovation. What is the historical or continuing significance of this innovation? What positive impact has it had on the design and technologies or digital technologies industry at the local or (inter)national level? Has it had a positive impact on wider subject, learning or industry areas?
- Where possible, organise an excursion to a public Aboriginal and Torres Strait Islander technologies organisation, event or exhibition. What learnings and messages did you take away from your excursion? Were there any collaborations occurring between this Aboriginal and Torres Strait Islander organisation and non-Indigenous organisations, and/or can you think of any potential positive avenues for collaboration?
- How might your school or early learning service contribute to the celebration of Aboriginal and Torres Strait Islander technologies, and Aboriginal and Torres Strait Islander designers and inventors?
- How can embedding Aboriginal and Torres Strait Islander cultures and histories into the study and practice of Design and Technologies, and Digital Technologies, help to foster reconciliation?