Ancient super highways

*Please refer to the online lesson plan on the DT Hub to access all website links and additional resources.*

**Years 7-8** In this lesson, students compare physical networks (wired and wireless) to the ancient network related to Aboriginal People’s trading practices throughout history including trade routes.

# Language note

We have chosen to use the terms ‘Aboriginal and Torres Strait Islander’ and ‘First Nations Australian’ throughout this resource to align with the language used in version 9.0 of the Australian Curriculum. We also use ‘First Nations Traditional Owners’ as this is Tania Taylor’s preference. We acknowledge that this may not be the preferred term for the First Nations Peoples where your school resides. Educators and leaders are encouraged to engage with First Nations Traditional Owners of the land you reside on to clarify preferred language.

# About the authors

**Tania Taylor**

Tania Taylor is a proud Kaurna, Narrunga and Ngadjuri woman with nearly 20 years experience in community development and engagement, mentoring, education support, program design and strategic planning. She has served her community as an active board member of the Kaurna Yerta Aboriginal Corporation for eight years. Tania’s knowledge and experience includes working with Aboriginal communities in metropolitan, in a range of settings level across Australia.

**Kim Martin**

Kim Martin is an accomplished educator, with expertise in inclusive learning technologies. She has held various teaching and leadership roles in the education sector, non-profit organisations and education technology companies across South Australia. Kim's commitment to education through technology is exemplified by her accolades, including 2014 ACCE Educator of the Year, and recent recognition as the 2023 EdTechSA Leader of the Year. Her passion lies in harnessing technology to facilitate differentiated learning experiences enabling learners to demonstrate their knowledge and understanding. Kim is a non-Aboriginal collaborator.

# Engaging with Aboriginal and Torres Strait Islander communities

### Protocols for engaging with Aboriginal and Torres Strait Islander communities

Consider inviting an Aboriginal or Torres Strait Islander community member to your class. They can share insights and experiences of travelling to visit family on Country from their perspective. When approaching community members, including Elders, please be mindful that not all possess knowledge relevant to your learning outcomes. As individuals, just like everyone else, they have diverse specialties and interests. It cannot be assumed that they have the authorisation or a willingness to share their knowledge.

In the learning environment, fostering positive experiences with Aboriginal Peoples and Torres Strait Islander Peoples is crucial for promoting attitudinal change and building respectful relationships. Inviting active involvement of Aboriginal and Torres Strait Islander Peoples in all stages of your program development by employing them as guides and experts, not just guest speakers, can provide valuable learning experiences that enrich your and students’ knowledge and awareness beyond the individual lesson shared here. Before you invite guests from Aboriginal or Torres Strait Islander communities to your school, first seek out information about proffered protocols for engaging with Aboriginal or Torres Strait Islander Peoples on your Country. Local government websites often have guiding information to help you. Common considerations include the negotiation of dates, time and duration, and payment rates well in advance, and ensuring that the visitor has transport arrangements.

We recommend referring to your state or territory education governing body for context and guidelines regarding culturally respectful practices. Here are a few links to get your started.

* SBS: Aboriginal and Torres Strait Islander Protocols Guide – for Teachers
* Culture is Life: Teaching First Nations Knowledges & Perspectives
* Beyond Blue | Be You: Culturally respectful engagement for learning communities

## Cultural safety

Every child has a right to feel safe at school. Creating safe conditions for learning involves providing supported yet challenging environments to enable high-quality learning opportunities. Cultural safety, defined as an environment that is spiritually, socially and emotionally secure (Williams, 1999), is crucial. It encompasses shared respect, meaning and knowledge, and the experience of learning together with dignity. In classrooms, recognising the diverse life experiences and knowledges of Aboriginal and Torres Strait Islander children is essential, acknowledging that each student's connection to and understanding of their histories and cultures varies. Caution is advised when requesting students to share information, as they may not possess the knowledge, permission or comfort to do so, causing cultural load for the student. In interactions involving First Nation Australian historical and cultural contexts, establish ground rules for respectful discussions and behaviours, considering the complexity and sensitivity of each student's identity and cultural connection.

Reference

Williams, R. (1999). Cultural safety: What does it mean for our work practice? *Australian and New Zealand Journal of Public Health*, 23(2), 213–214.

## Indigenous Cultural and Intellectual Property

‘Indigenous Cultural and Intellectual Property [ICIP]refers to the rights that Indigenous people have, and want to have, to protect their traditional arts and culture’ (Arts Law Centre of Australia).

The lesson ideas and discussion prompts are designed to support teachers in facilitating learning opportunities that help students’ understanding of First Nation Australian ways of knowledge and perspectives within the curriculum area of Technologies, specifically the Digital Technologies subject. We see many opportunities for integrated learning across all learning areas including English, Mathematics, Arts, and Humanities and Social Sciences (HASS).

Learn more: ICIP information sheet

# Why is this important

* A computer network allows connected devices to exchange data (information).
* The internet is a network of networks cooperating with each other to exchange information (data) following a set of rules (protocols).
* Every device connected to the internet requires a unique address so other computers can find it and share or send data to it. This is an IP address.
* By focusing on the Aboriginal People’s trading practices throughout history, including trade routes, students are able to see connections to the way information is passed on through another type of network that has cultural significance.

# Learning input

* Explain that while learning about how computer networks work, we are also going to compare this to ancient First Nations Australians trade routes to help guide our understanding about how old knowledge and practices have contributed to new knowledge and practices we use today.
* After viewing The First Inventors video, present this introductory video about computer networks (5 mins), Computer Networking Explained.
* Provide these headings for students to compare and contrast computer networks and ancient First Nations Australians trade routes. Make a list of the similarities and differences between the ancient Super Highways and a computer network. This could be completed as a class Venn diagram drawn on a whiteboard or as a table to show similarities and differences.
* Headings may include:
  + Connecting and communicating
  + Exchange of information
  + Sharing resources
  + Threats and protection
  + Central meeting points.
* Ask students work in pairs and record each idea on a single post-it note.Provide time forthe post-it notes to be displayed on the class whiteboard.
* Use these examples to help guide discussion:
  + **Connecting and communicating**: Just like trade routes connected different communities for the exchange of goods and cultural knowledge, a computer network connects different devices and users for communication and resource sharing.
  + **Exchange of information**: Just as trade routes facilitated the exchange of goods and information between communities, a computer network enables the exchange of data and information between users and devices.
  + **Sharing resources**: Trade routes allowed communities to share resources and goods. Similarly, a computer network allows users to share files, data, and resources like printers and internet connections.
  + **Threats and protection**: Trade routes traversed diverse landscapes and territories that posed threats to the travellers, computer networks require security measures such as firewalls and encryption to protect against cyber threats and unauthorised access.
  + **Central meeting points**: Trade routes may have had a place on Country where goods were exchanged. In a computer network, servers can be seen as central hubs where data is stored and exchanged between users.

# Learning construction

* Provide students with the worksheet, Networks and trade routes. Use the worksheet to discuss the components of a network and the definitions provided. Students can consider possible ways the ancient trade routes might be similar to these network components.
* Use the answer guide to discuss similarities identified by students and support discussion focusing on relevant network components.

# Learning demo

* Establish that First Nations Australians engaged in trade, based on the resources available in their local area, exchanging them with other Aboriginal groups that lacked access to those specific resources.
* View the video Shells and other vessels, at approximately 10 min, Bart Pigram (Yawuru man from Broome) shares his knowledge of using pearl shells for body decoration and their value for Yawuru people in trading. He discusses the pearl shell as a commodity which First Nations people traded. He shares knowledge of well-travelled trade routes across Country.
* Provide two options for students to demonstrate their understanding of networks and the connection to First Nations Australian trade routes.
  + Thinking about networks, students research an area they regularly visit, or one of the ancient Australian trade routes and recreate it by coding an interactive map. Provide this video Coding Interactive Maps and refer to this lesson plan for guidance.
  + Research ways that First Nations Australian represent travel and maps through art using aerial view and often representing meeting places and the journey taken. First Nations artists work that may be of interest include Priscilla Nangala Robertson and Steven Jupurrula Nelson. Sites to visit may include Japingka Aboriginal Art, Art Ark. After researching the aerial view mapping style of artwork, students can create their own digital artwork based on a journey unique to them.
* Students share their design of a network or interactive map with a peer. This could be a computer network or a travel route unique to them and expressed in a way that represents their understanding. Students discuss their artwork, explaining how essential elements of a computer or journey network have been represented.

# Learning reflection

Ask questions for reflection, such as:

* How did communities along ancient trade routes communicate without modern technology?
* What information do we share when shopping, using social media, or playing internet-connected games?
* What networks are you a part of (e.g., gaming, social media, sport, employment, family)?
* Do you think current methods of securing information over computer networks are effective?
* Why are the ancient super highways of First Nations Australians still important today, and how might learning about them change our understanding of Australia's history?

# Teacher cultural competencies

* When accessing content online about First Nations history, there will be a variety of terminologies used. It is important to have a conversation about this with students discussing language differences and reasons this may occur. How we may come across terms that are no longer considered appropriate where we live. This may be due to the time the article or resource was written, where the article was written, whether it was written from a First Nations person’s perspective or if the author is aware of current culturally appropriate use of language.
* It is important to be guided by the First Nations Australians you are working with and current education sector guidelines.

# Differentiation

* Students can research whether there was an ancient superhighway that connected where they live to other places in Australia. Find out if the current roadways follow the same path. Share a map of ancient trade routes in Australia and a map of Australia Australian major roads today.
* Students can learn more about the Coral Sea trade routes. Refer to this podcast.
* Ask students to research other ancient trade routes (for example, Silk Road) to compare similarities with how computer networks work.
* Investigate Digital Technologies being used by scientist to trace ancient Aboriginal Trade routes and how the South Australian Museum is using technology like high powered x-ray, GPS (global positioning system) and spectrometer technology to track the movement of artefacts that have Ochre properties from over 150 years ago. Use the articles Science Uses Ochre To Map Ancient Aboriginal Trading Routes and Aboriginal ochre fingerprinting helping researchers trace ancient Indigenous trade routes
* Link your learning about networks and trade routes with public transport routes. Use the Digital Technologies Hub lesson Computer Chatter 1.

# Resources

* Compare networks and ancient trade routes: Word document
* Answer guide - Compare networks and ancient trade routes: Word document
* Video: Computer networking explained
* SBS On Demand: The First Inventors
* First Nations trading routes: Walk in 3 Worlds
* Art materials or digital art tools to complete individual network design. Digital art tools may include Tayasui Sketches or ProCreate on iPad or Adobe illustrator or Inkscape on Mac or PC.
* Google Maps to research travel paths known to students. We recommend utilising multiple destination options to personalise your journey map.
* First Nations artists’ work that may be of interest include Priscilla Nangala Robertson and Steven Jupurrula Nelson . Sites to visit may include Japingka Aboriginal Art and Art Ark
* Podcast: First Australians thousands of years ago

# Australian Curriculum

### Digital Technologies

**Achievement standards**

* By the end of Year 8, students [select appropriate hardware for particular tasks, explain how data is transmitted and secured in networks, and identify cyber security threats.](about:blank)
* By the end of Year 10, students explain how digital systems manage, control and secure access to data; and model cyber security threats and explore a vulnerability.

### Content descriptions

* Year 7 and 8: Knowledge and Understandings: Digital Systems: investigate how data is transmitted and secured in wired and wireless networks including the internet (AC9TDI8K02)
* Year 9 and 10: Knowledge and Understandings: Digital Systems: investigate how hardware and software manage, control and secure access to data in networked digital systems (AC9TDI10K01)

# Related content

### Science Year 1

* Science Understanding: Earth and Space Sciences: describe daily and seasonal changes in the environment and explore how these changes affect everyday life (AC9S1U02)

### Mathematics Year 1

* Statistics:acquire and record data for categorical variables in various ways including using digital tools, objects and images, drawings, lists, tally marks and symbols (AC9M1ST01)

### HASS

**Years 7**

* History: Knowledge and Understanding: Deep time history of Australia: How First Nations Australians are the world’s oldest continuing cultures, displaying evidence of both continuity and change over deep time. (AC9HH7K03)
* History: Knowledge and Understanding: Deep time history of Australia:The technological achievements of early First Nations Australians, and how these developed in different places and contributed to daily life, and land and water source management ([AC9HH7K05](about:blank))

### Year 8

* Geography: Knowledge and Understanding: Landscapes and Landforms: the spiritual, aesthetic and cultural value of landscapes and landforms for people, including Country/Place of First Nations Australians (AC9HG8K03)
* Economics and Business: Knowledge and Understanding: how First Nations Australian businesses and entrepreneurs develop opportunities in the market. (AC9HE8K03)

# Cross-curriculum priorities

### Aboriginal and Torres Strait Islander Histories and Cultures

### People

First Nations Australians have sophisticated political, economic and social organisation systems, which include family and kinship structures, laws, traditions, customs, land tenure systems, and protocols for strong governance and authority. (A\_TSIP2)

The significant and ongoing contributions of First Nations Australians and their histories and cultures are acknowledged locally, nationally, and globally. (A\_TSIP3)

**Country/Place**

First Nations communities of Australia maintain a deep connection to, and responsibility for, Country/Place and have holistic values and belief systems that are connected to the land, sea, sky and waterways. (A\_TSICP1)

The First Peoples of Australia are the Traditional Owners of Country/Place, protected in Australian Law by the Native Title Act 1993 which recognises pre-existing sovereignty, continuing systems of law and customs, and connection to Country/Place. This recognised legal right provides for economic sustainability and a voice into the development and management of Country/Place. (A\_TSICP3)

**Culture**First Nations Australians’ ways of life reflect unique ways of being, knowing, thinking and doing. (A\_TSIC2)