**Australian Curriculum:
Digital Technologies**

**Years 3–4**

**Sample assessment task**

 **Cooling the school**

**Assessment focus:** Australian Curriculum:Digital Technologies
(digital systems)

**About this assessment task**

This sample assessment task has been prepared to assist teachers with the implementation of the Australian Curriculum: Digital Technologies, with a focus on *digital systems*. It shows how aspects of the Digital Technologies curriculum related to digital systems can be assessed using contexts from other learning areas and subjects. These contexts may be content that students have recently completed or are learning concurrently. This approach should enhance the manageability of the curriculum while still providing a targeted focus on Digital Technologies.

**Purpose**

The sample task aims to:

* demonstrate meaningful curriculum links to:
* Digital Technologies curriculum:
	+ - achievement standard
		- content descriptions
		- content strands and sub-strands
		- core concepts (Technologies)
		- core concepts (Digital Technologies)
* general capabilities
* cross-curriculum priorities
* other learning areas. See Appendix 1 for specific links for this task.
* provide teacher support materials, suggested adjustments for students with diverse needs and resources. See Appendix 2.
* provide a template to create your own assessment task. See Appendix 3.

**How to use this sample task**

The sample task can be implemented as a standalone task or it can be used to inform planning of a:

* unit of work that might accompany the sample task
* similar task and/or unit of work with a focus on digital systems.

Title: Cooling the school

**Assessment focus:** Australian Curriculum: Digital Technologies (Digital systems – explore and describe a range of digital systems and their peripherals for a variety of purposes, and explore transmitting different types of data between digital systems). This task is also linked to Mathematics and HASS. Depending on modifications made to this task, opportunities may exist to link it to Science, English, Literacy and Numeracy.

**Band:** Years 3 and 4

**Context:** Students explore how a range of digital systems can be useful in the school environment (integrating Digital Technologies, Mathematics and HASS).

**Duration:** 4–8 weeks dependent on prior learning

**Prior learning:** Students will have:

* identified and explored digital systems and their components for
a purpose
* participated in a number of design, computational and systems thinking tasks in Years 1–2
* created maps with physical and drawn materials
* understood the difference between 2-dimensional and 3-dimensional objects
* been introduced to the term: ‘bird’s-eye view’
* had an opportunity to locate their home on a digital map, for example, Google or
Apple maps
* identified landmarks from their local area on a digital map, for example, parks, beach, shopping centre roads, bike track
* had opportunities in class to draw their own map to interpret their place in the world
* been introduced to the importance of direction, scale and key on a map
* had opportunities to represent features on a map from ones created by themselves or by seeing how cartographers (map makers) have represented features
* been engaged in descriptive writing tasks
* explored different ways of measuring environmental conditions in the past that are not digital, for example, a rain gauge, sundial.

## **Task summary**

**Key inquiry question:**

* How could we cool the school environment?

**Focus questions:**

* How do maps help us to understand our environment?
* How could we use data to help us cool the school environment?

**Students will:**

* understand the components of a digital system
* understand that the same data can be represented in different ways depending on the purpose
* use digital mapping software to access data about the school environment
* acquire and manipulate different data about the school environment using a variety of tools
* make generalisations about data
* interpret and use data to plan a solution to cool their school
* reflect on the way their planned solution will meet needs.

## **Task features**

**Students work in pairs or groups of 3 to:**

* compare and contrast the representations of landscapes and their own environment with those of maps from earlier years and today
* determine how their school environment can be refined and enhanced with more specific details not found on larger scale maps, for example, the best place for hiding in hide and seek; the coolest place to be on a hot day; the best corner of the school to find a quiet place to read
* compare objects from the world around them with their school environment using systems thinking and discuss how their school can be represented as a system
* examine the components of an old computer, explore an image of the inside of a computer that shows its component parts or explore this [interactive image – inside a computer with explanatory labels](https://www.thinglink.com/scene/522420444112879618). Students could break it down into a system of integrated parts, for example, keyboard, mouse, circuit board, fan, screen
* discuss how these individual parts that make up a computer as an integrated design compare to the school environment/system, for example: Could a cool area of the school with a pond be compared to the fan in an older computer? How do they compare (similarities and differences)?
* describe how digital systems could help us capture data about our environment, for example, take photos with a tablet device to show shady and sunny areas in the playground, use a lux meter app to identify the light levels in different areas
* identify a range of recording tools that could be used to collect data around the school, for example, use a digital thermometer to measure the temperature under a tree and in full sun, a floating thermometer to measure the temperature of a pond, a rain gauge to measure rainfall, a camera to photograph the number of areas with and without shade, a lux meter app to measure light levels in the shade and in full sun, a digital weather station to gather weather data over a chosen period of time
* identify how they might use the data to plan how to cool their school
* identify different areas to measure on a digital map
* identify what is worth measuring and therefore what are the most meaningful data that can be collected
* determine the best means of sharing their data
* acquire and record their data\* in such a way that others can interpret what they are recording, for example titles
* mark areas on a map of their school environment to show where each recording
was taken
* present their data and recommendation as a poster, video or slideshow presentation to others with a plan to increase ways of cooling the school, for example, plant more trees on the western side of the oval.

\*Note: Be sure to mark time and date on each data set (this will be important in interpreting the data as seasons and time of day will change results and assist in designing a cool school).

**Background information**

**Teacher guidance and support**

Share with students a range of maps including historical maps – physical and digital – to see how they have developed over time (see figures 1–4). For example, compare a historic map of the Australasian region with a recent cartographic representation. Compare these maps with digital representations such as Google Maps, OpenStreetMap and virtual songlines

Scribble Maps can be used as an interactive platform for students to record data of their own school environment. This allows students to take measurements and record on the digital map.

Useful links:

[maps.google.com](https://acaraonline.sharepoint.com/sites/digital-technologies-in-focus/Administration/Planning/Assessment%20task%20trials/Systems%20assessment%20tasks/3-4/www.maps.google.com)

[openstreetmap.org](https://acaraonline.sharepoint.com/sites/digital-technologies-in-focus/Administration/Planning/Assessment%20task%20trials/Systems%20assessment%20tasks/3-4/www.openstreetmap.org)

[virtualsonglines.org/](https://www.virtualsonglines.org/)

[scribblemaps.com](https://acaraonline.sharepoint.com/sites/digital-technologies-in-focus/Administration/Planning/Assessment%20task%20trials/Systems%20assessment%20tasks/3-4/www.scribblemaps.com)

Teachers should:

* allow time for discussion and encourage comparison of a digital system and a school environment
* allow time for exploration and searching of analog and digital maps
* provide time for the students to map their school environment, marking in places where recording of data would best take place
* encourage students to refer to the information they were discussing in class on ‘what makes up a system’ and look for systems in their built and natural environments around the school or at home
* give students opportunities to capture and record data (temperature in full sun, under trees, in ponds, rainfall, etc.) and refer to recorded data, if available, from previous years
* ask students:
	+ Do you see a pattern in the seasonal data?
	+ Can you predict future trends from the records?
	+ How will the data determine the task you have been set of ‘Cooling the school’?
	+ Why do you think it is important to gather data from as many sources as you can before planning ways to cool the school?

|  |
| --- |
| **Sample historical maps** |
| Diagram  Description automatically generated |  |
| Figure 1: Abel Tasman’s *Karte von Australien* (map of Australia), c. 1644 (published 1870) *Image source: flickr.com/photos/12403504@N02/11245652285* | Figure 2: Matthew Flinders’ general chart of Terra Australis or Australia showing the parts explored between 1798 and 1803 (published 1814)*Image source:* *nla.gov.au/nla.obj-232588549* |
| Diagram  Description automatically generated | Online map showing First Nations’ perspectives: [The AIATSIS Map of Indigenous Australia](https://aiatsis.gov.au/explore/map-indigenous-australia) |
| Figure 3: Digitised image from a geography textbook published in 1893*Image source: flickr.com/photos/britishlibrary/11224235365/in/album-72157650512420799/* | *Online Map location: aiatsis.gov.au/explore/map-indigenous-australia* |

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**Links to the Australian Curriculum v9**

Table 1 shows all the related Australian Curriculum: Digital Technologies links to this task. For a more in-depth exploration of the links to the curriculum, see Appendix 1.

Table 1: Links from the task to the Australian Curriculum: Digital Technologies v9

|  |  |
| --- | --- |
| **Digital Technologies** ***Achievement standard***Aspects addressed by this task are highlighted. | By the end of Year 4 students create simple digital solutions and use provided design criteria to check if solutions meet user needs. Students process and represent data for different purposes. They follow and describe simple algorithms involving branching and iteration and implement them as visual programs. Students securely access and use digital systems and their peripherals for a range of purposes, including transmitting data. They use the core features of common digital tools to plan, create, locate and share content, and to collaborate, following agreed behaviours. Students identify their personal data stored online and recognise the risks.  |
| ***Strands******Sub-strands*** | Digital Technologies knowledge and understanding * Digital systems
* Data representation

Digital Technologies processes and production skills * Creating designed solutions by
* investigating and defining
* evaluating
* collaborating and managing
 |
| ***Content descriptions*** | * explore and describe a range of digital systems and their peripherals for a variety of purposes AC9TDI4K01
* explore transmitting different types of data between digital systems AC9TDI4K02
* recognise different types of data and explore how the same data can be represented differently depending on the purpose AC9TDI4K03
* define problems with given design criteria and by co-creating user stories AC9TDI4P01
* discuss how existing and student solutions satisfy the design criteria and user stories AC9TDI4P05
* use the core features of common digital tools to create, locate and communicate content, following agreed conventions AC9TDI4P06
* use the core features of common digital tools to share content, plan tasks, and collaborate, following agreed behaviours, supported by trusted adults AC9TDI4P07
 |
| ***Technologies core concepts*** | * preferred futures
* systems
* data
* systems thinking
* interactions and impact
* enterprise skills and innovation
 | ***Digital Technologies core concepts*** | * digital systems
* data representation
* data acquisition\*
* data interpretation\*
* abstraction
 |
| ***General capabilities*** | * Digital Literacy
* Literacy
* Numeracy
* Critical and Creative Thinking
* Personal and Social capability
 |
| ***Cross-curriculum priorities*** | * Sustainability
 | ***Learning area or subject connections*** | * HASS (Geography)
* Science
* English
 |

\*through Mathematics content descriptions

Table 2: Links from the task to the Australian Curriculum: Mathematics (v9)

|  |  |
| --- | --- |
| **Mathematics*****Year 3 Achievement standard***Aspects addressed by this task are highlighted. | By the end of Year 3, students order and represent natural numbers beyond 10 000. They partition, rearrange and regroup two- and three-digit numbers in different ways to assist in calculations. Students use and extend single-digit addition and related subtraction facts, and apply additive strategies to model and solve problems involving two- and three-digit numbers. They model situations and solve problems involving single-digit multiplication and division, recalling multiplication facts for twos, threes, fives and tens, and using a range of strategies. Students represent unit fractions and their multiples in different ways. They make estimates and determine the reasonableness of financial and other calculations. Students find unknown values in number sentences involving addition and subtraction. They follow and create algorithms to investigate numbers. Students use familiar metric units when estimating, comparing and measuring the attributes of objects and events. They identify angles as measures of turn and compare them to right angles. Students communicate estimates and measures of duration using formal units of time. They represent money values in different ways. Students make, compare and classify objects using key features. They interpret and create two-dimensional representations of environments. Students conduct guided statistical investigations involving categorical and discrete numerical data, and interpret their results in terms of the context. They record, represent and compare data they have collected. Students conduct repeated chance experiments and discuss variation in results.  |
| ***Year 4 Achievement standard***Aspects addressed by this task are highlighted. | By the end of Year 4, students use their understanding of place value to represent tenths and hundredths in decimal form and to multiply natural numbers by multiples of 10. They model financial and other situations, formulating and solving the problem using number sentences, and interpret results in terms of the situation. Students use addition and multiplication facts to add and subtract, multiply and divide numbers efficiently. They choose rounding and estimation strategies to determine whether results of calculations are reasonable. Students use the properties of odd and even numbers. They recognise equivalent fractions and make connections between fraction and decimal notations. Students count and represent fractions on a number line. They find unknown values in numerical equations involving addition and subtraction. Students follow and create algorithms that generate sets of numbers and identify emerging patterns. They use scaled instruments and appropriate units to measure length, mass, capacity and temperature. Students measure and approximate perimeters and areas. They convert between units of time when solving problems involving duration. Students compare angles relative to a right angle using angle names. They represent and approximate complex shapes and objects in the environment. Students create and interpret grid reference maps. They identify line and rotational symmetry in plane shapes and create symmetrical patterns. Students create many-to-one data displays, assess the suitability of displays for representing data and discuss the shape of distributions and variation in data. They use surveys and digital tools to generate categorical or discrete numerical data in statistical investigations and communicate their findings in context. Students order the outcomes of chance events in terms of likelihood and identify whether outcomes are independent or dependent.  |
| ***Strands*** | * Space
* Statistics
 |
| ***Year 3 Content descriptions*** | * interpret and create two-dimensional representations of familiar environments, locating key landmarks and objects relative to each other AC9M3SP02
* acquire categorical and discrete numerical data by observing, collecting and accessing data sets; record the data using appropriate methods including frequency tables and spreadsheets; compare data using frequency AC9M3ST01
* create and compare different graphical representations of data sets including using software; interpret the data in terms of the context AC9M3ST02
* conduct guided statistical investigations involving the collection, representation and interpretation of categorical and discrete numerical data with respect to questions of interest AC9M3ST03
 |
| ***Year 4 Content descriptions*** | * create and interpret grid reference systems using grid references and directions to locate and describe positions and pathways AC9M4SP02
* acquire categorical and discrete numerical data using digital tools; represent data using many-to-one pictographs, column graphs and other displays or visualisations; interpret and discuss the information that has been created AC9M4ST01
* analyse the effectiveness of different displays or visualisations in illustrating and comparing data distributions, then discuss the shape of distributions and the variation in the data AC9M4ST02
* conduct statistical investigations, collecting data through survey responses and other methods; record and display data using digital tools; interpret the data and communicate the results AC9M4ST03
 |

**Assessment planner**

|  |  |
| --- | --- |
| **Achievement standard**(relevant aspect of the achievement standard to be assessed) | **Student evidence** (what student evidence will be considered to judge if the achievement standard aspect has been met) |
| **Digital Technologies** |
| Students securely access and use digital systems and their peripherals for a range of purposes, including transmitting data. | * Students interact with a variety of digital systems including online maps and describe the similarities and differences between the geographic information systems.
* Students transfer data from the map into their presentation software.
 |
| students create simple digital solutions and use provided design criteria to check if solutions meet user needs. | * Students interpret a range of maps of their school to identify features from provided design criteria that would support the creation of natural cool spaces for the school community.
 |
| They use the core features of common digital tools to plan, create, locate and share content | * Students identify areas within their built and natural environments that are cooler using a range of measuring devices.
 |
| Students process and represent data for different purposes  | * Students demonstrate an understanding of how to represent data either digitally or unplugged.
 |
| They use the core features of common digital tools to plan, create, locate and share content, and to collaborate, following agreed behaviours. | * Students design their preferred school environment using aerial data from a range of maps, both aerial and topographic, that represent their school environment. They include direction, scale and key in their designs.
* Students share their recommendations as a podcast, interviews with experts or peers, a video guide or as a word-processed document that allows them to present their solutions for a cool school to their peers.
 |
| **Mathematics** |
| **Year 3**They interpret and create two-dimensional representations of environments.  | * Students design their preferred school environment using aerial data from a range of maps, both aerial and topographic, that represent their school environment. They include direction, scale and key in their designs.
 |
| Students conduct guided statistical investigations involving categorical and discrete numerical data, and interpret their results in terms of the context. They record, represent and compare data they have collected.  | * Students record the various data inputs and compare and contrast the information to inform their plans to cool the school.
* Students identify patterns in the data.
 |
| **Year 4**Students create and interpret grid reference maps.  | * Students design their preferred school environment using aerial data from a range of maps, both aerial and topographic, that represent their school environment. They include direction, scale and key in their designs.
 |
| Students create many-to-one data displays, assess the suitability of displays for representing data and discuss the shape of distributions and variation in data. They use surveys and digital tools to generate categorical or discrete numerical data in statistical investigations and communicate their findings in context.  | * Students record the various data inputs and compare and contrast the information to inform their plans to cool the school.
* Students identify patterns in the data.
 |

## **Assessment rubric**

The rubric below shows only Digital Technologies. **Note:** There are opportunities to include HASS, Literacy and Numeracy in the assessment.

|  |  |  |  |
| --- | --- | --- | --- |
| **Digital Technologies** | **Below standard*****Students*:** | **At standard*****Students*:** | **Above standard*****Students*:** |
| Students securely access and use digital systems and their peripherals for a range of purposes, including transmitting data. |
| **Digital systems** | identify common digital systems (hardware and or software) for a given purpose | describe how digital systems (hardware and software) and their peripheral devices can be used for a range of purposes including transmitting data | provide a detailed description using a variety of examples of how a range of digital systems (hardware and software) and their peripheral devices can be used to collect, sort and display data |
| Students process and represent data for different purposes. |
| **Data representation** | identify how data sets can be represented  | explain how the same data sets can be represented in different ways | provide detailed explanation with examples about how the same data sets can be represented in different ways considering 2 different measures |
| students create simple digital solutions and use provided design criteria to check if solutions meet user needs. |
| **Investigating and defining** | create simple digital solutions | create simple digital solutions to address the lack of natural shade in the school using given design criteria to check if solutions meet needs of the school community | create simple digital solutions and explain how they address the lack of natural shade in the school using given design criteria to check if solutions meet needs of the school community |
| They use the core features of common digital tools to plan, create, locate and share content, and to collaborate, following agreed behaviours. |
| **Evaluating and collaborating and managing** | Use digital tools to locate content and collaborate with others | use digital tools to plan, locate and design solutions for lack of shade in the school and collaborate and share with others following agreed behaviours | use a range of digital tools to plan, locate and design solutions for lack of shade in the school and collaborate and share with others following agreed behaviours |

|  |  |  |  |
| --- | --- | --- | --- |
| **Mathematics** | **Above standard*****Students*:** | **At standard*****Students*:** | **Below standard*****Students*:** |
| **Year 3** They interpret and create two-dimensional representations of environments.  |
| **Space**  | use digital mapping software with support | use digital mapping software to access and interpret data about the school environment | independently use digital mapping software to access, and explain data about the school environment |
|  | create two-dimensional representations | create two-dimensional representations of the school environment | create two-dimensional representations of the school environment using digital tools and accurate labels |
| Students conduct guided statistical investigations involving categorical and discrete numerical data, and interpret their results in terms of the context. They record, represent and compare data they have collected. |
| **Statistics**  | collect simple data | collect and record categorical and discrete numerical data about the natural shade in the school environment  | independently use digital systems and peripheral devices to collect and manipulate data needed to plan a solution |
|  | make observations about data | represent and compare the data to make generalisations about data  | use data to compare and contrast the findings and visualise data in different ways  |
| **Year 4** Students create and interpret grid reference maps.  |
| **Space** | use digital mapping software with support | use digital mapping software including grid references to access data about the school environment  | independently use digital mapping software to access, and explain data about the school environment citing grid referenced locations |
|  | create grid reference maps | create grid reference maps of the school environment | Independently create and explain grid reference maps of the school environment |
| Students create many-to-one data displays, assess the suitability of displays for representing data and discuss the shape of distributions and variation in data. They use surveys and digital tools to generate categorical or discrete numerical data in statistical investigations and communicate their findings in context. |
| **Statistics**  | collect simple data | collect and display different data about the school environment using a variety of tools | independently use digital systems and peripheral devices to collect and display data  |
|  | make observations about data | assess the suitability of displays for representing data  | use data to compare and contrast the findings and visualise data in different ways to determine best method for representing data |
|  | discuss the data  | discuss the shape of distributions and variation in data | discuss findings including shape of distributions and explain variations in data |
|  | communicate elements in the data | communicate their findings in context | communicate findings with diagrams and detailed explanations |

**Appendix 1**

 **Australian Curriculum links (in detail)**

**Links to the Australian Curriculum**

**Digital Technologies (v9)**

**Achievement standard**

By the end of Year 4 students create simple digital solutions and use provided design criteria to check if solutions meet user needs. Students process and represent data for different purposes. They follow and describe simple algorithms involving branching and iteration and implement them as visual programs. Students securely access and use digital systems and their peripherals for a range of purposes, including transmitting data. They use the core features of common digital tools to plan, create, locate and share content, and to collaborate, following agreed behaviours. Students identify their personal data stored online and recognise the risks.

**Content descriptions**

|  |
| --- |
| explore and describe a range of digital systems and their peripherals for a variety of purposes AC9TDI4K01 explore transmitting different types of data between digital systems AC9TDI4K02 recognise different types of data and explore how the same data can be represented differently depending on the purpose AC9TDI4K03 define problems with given design criteria and by co-creating user stories AC9TDI4P01 discuss how existing and student solutions satisfy the design criteria and user stories AC9TDI4P05 use the core features of common digital tools to create, locate and communicate content, following agreed conventions AC9TDI4P06 use the core features of common digital tools to share content, plan tasks, and collaborate, following agreed behaviours, supported by trusted adults AC9TDI4P07  |

**Mathematics v9**

**Year 3 Achievement standard**

By the end of Year 3, students order and represent natural numbers beyond 10 000. They partition, rearrange and regroup two- and three-digit numbers in different ways to assist in calculations. Students use and extend single-digit addition and related subtraction facts, and apply additive strategies to model and solve problems involving two- and three-digit numbers. They model situations and solve problems involving single-digit multiplication and division, recalling multiplication facts for twos, threes, fives and tens, and using a range of strategies. Students represent unit fractions and their multiples in different ways. They make estimates and determine the reasonableness of financial and other calculations. Students find unknown values in number sentences involving addition and subtraction. They follow and create algorithms to investigate numbers.

Students use familiar metric units when estimating, comparing and measuring the attributes of objects and events. They identify angles as measures of turn and compare them to right angles. Students communicate estimates and measures of duration using formal units of time. They represent money values in different ways. Students make, compare and classify objects using key features. They interpret and create two-dimensional representations of environments.

Students conduct guided statistical investigations involving categorical and discrete numerical data, and interpret their results in terms of the context. They record, represent and compare data they have collected. Students conduct repeated chance experiments and discuss variation in results.

**Year 3 Content descriptions**

|  |
| --- |
| interpret and create two-dimensional representations of familiar environments, locating key landmarks and objects relative to each other AC9M3SP02 acquire categorical and discrete numerical data by observing, collecting and accessing data sets; record the data using appropriate methods including frequency tables and spreadsheets; compare data using frequency AC9M3ST01 create and compare different graphical representations of data sets including using software; interpret the data in terms of the context AC9M3ST02 conduct guided statistical investigations involving the collection, representation and interpretation of categorical and discrete numerical data with respect to questions of interest AC9M3ST03 |

**Year 4 Achievement standard**

By the end of Year 4, students use their understanding of place value to represent tenths and hundredths in decimal form and to multiply natural numbers by multiples of 10. They model financial and other situations, formulating and solving the problem using number sentences, and interpret results in terms of the situation. Students use addition and multiplication facts to add and subtract, multiply and divide numbers efficiently. They choose rounding and estimation strategies to determine whether results of calculations are reasonable. Students use the properties of odd and even numbers. They recognise equivalent fractions and make connections between fraction and decimal notations. Students count and represent fractions on a number line. They find unknown values in numerical equations involving addition and subtraction. Students follow and create algorithms that generate sets of numbers and identify emerging patterns.

They use scaled instruments and appropriate units to measure length, mass, capacity and temperature. Students measure and approximate perimeters and areas. They convert between units of time when solving problems involving duration. Students compare angles relative to a right angle using angle names. They represent and approximate complex shapes and objects in the environment. Students create and interpret grid reference maps. They identify line and rotational symmetry in plane shapes and create symmetrical patterns.

Students create many-to-one data displays, assess the suitability of displays for representing data and discuss the shape of distributions and variation in data. They use surveys and digital tools to generate categorical or discrete numerical data in statistical investigations and communicate their findings in context. Students order the outcomes of chance events in terms of likelihood and identify whether outcomes are independent or dependent.

**Year 4 Content descriptions**

|  |
| --- |
| create and interpret grid reference systems using grid references and directions to locate and describe positions and pathways AC9M4SP02 acquire categorical and discrete numerical data using digital tools; represent data using many-to-one pictographs, column graphs and other displays or visualisations; interpret and discuss the information that has been created AC9M4ST01 analyse the effectiveness of different displays or visualisations in illustrating and comparing data distributions, then discuss the shape of distributions and the variation in the data AC9M4ST02 conduct statistical investigations, collecting data through survey responses and other methods; record and display data using digital tools; interpret the data and communicate the results AC9M4ST03 |

## **Digital Technologies Content strands and sub-strands (v9)**

|  |  |
| --- | --- |
| **Digital Technologies knowledge and understanding** | **Digital Technologies processes and production skills** |
| Digital systems  | X | Creating digital solutions by: |  |
| Representation of data | X | * investigating and defining
 | X |
|  | * generating and designing
 |  |
| * producing and implementing
 |  |
| * evaluating
 | X |
| * collaborating and managing
 | X |

## **Links to Technologies core concepts (v9)**

|  |  |  |
| --- | --- | --- |
| Creating preferred futures | Creating preferred futures is the overarching core concept. It involves identifying compelling visions of the future and making considered design decisions taking into account diversity; ethics; and economic, environmental and social sustainability factors. This overarching core concept is developed through the Technologies core concepts. | X |
| Systems | Systems comprise the structure, properties, behaviour and interactivity of people and components (inputs, processes and outputs) within and between natural, managed, constructed and digital environments.  | X |
| Data | Data can be acquired, interpreted and represented to help inform decision-making and can be manipulated, stored and communicated by digital systems.  | X |
| Interactions and impact | Interactions and impact need to be considered when creating solutions; this involves examining the relationships between components of technologies systems, sustainability and the effects of design decisions on users.  | X |
| Systems thinking  | Systems thinking helps people to think holistically about the interactions and interconnections that shape the behaviour of systems.  | X |
| Computational thinking | Computational thinking helps people to organise data logically by breaking down problems into parts; defining abstract concepts; and designing and using algorithms, patterns and models.  | X |
| Design thinking | Design thinking helps people to empathise and understand needs, opportunities and problems; generate, iterate and represent innovative, user-centred ideas; and analyse and evaluate those ideas.  |  |
| Technologies processes and production skills | Technologies processes and production skills help people to safely create solutions for a range of purposes and involve investigating and defining, generating and designing, producing and implementing, evaluating, and collaborating and managing.  |  |
| Project management skills | Project management skills help people to successfully and efficiently plan, manage and complete projects to meet identified design criteria.  |  |
| Enterprise skills and innovation | Enterprise skills and innovation helps people to identify opportunities to take action and create change; follow through on initiatives; and generate new ideas, processes and solutions.  | X |

**Links to the Digital Technologies core concepts (v9)**

The core conceptsthat underpin the Digital Technologies curriculum establish a way of thinking about problems, opportunities and digital systems and provide a framework for knowledge and practice. (Colour coding is based on the v8.4 [Australian Computing Academy scheme](https://aca.edu.au/#what-is-the-digital-technologies-curriculum).)

|  |  |  |  |
| --- | --- | --- | --- |
|  | **digital systems**  | processing data in binary, made up of hardware, controlled by software, and connected to form networks * *Students identify how digital components connect to form systems.*
* *Students interact with geographic information systems (digital maps).*
 | X |
|  | **data representation**  | data being represented and structured symbolically for storage, use and communication, by people and in digital systems * *The same data are represented differently depending on their purpose.*
* *Data can be represented in many ways, for example, photographs, tally marks, maps.*
 | X |
|  | **data acquisition\***  | numerical, categorical or structured values acquired or calculated to create information * *Students acquire and analyse data from digital maps and collect temperature data from around the school to inform the design of solutions to cool the school environment.*
 | X |
|  | **data interpretation\*** | extracting meaning from data * *Data help us build understanding of core concepts from other curriculum areas.*
* *The way we visualise data helps us interpret them to create meaning*
 | X |
|  | **abstraction** | reducing complexity by hiding details so that the main idea, problem or solution can be defined and focus can be on a manageable number of aspects  |  |
|  | **specification** | defining a problem precisely and clearly, identifying the requirements, and breaking the problem into manageable pieces * *Students identify how geographic information systems (digital maps) help us.*
* *Students specify ways that will promote cooling in the school environment as determined by the data acquired from the geographic information systems.*
 |  |
|  | **algorithms** | the precise sequences of steps and decisions needed to solve a problem, often involving iterative (repeated) processes  |  |
|  | **implementation** | the automation of an algorithm, typically by writing a computer program or using appropriate software  |  |
|  | **privacy and security** | the protection of data when it is stored or transmitted through digital systems |  |

\*Through Mathematics content

## **Cross-curriculum priorities** [Read more…](https://www.australiancurriculum.edu.au/f-10-curriculum/cross-curriculum-priorities/)

|  |  |  |
| --- | --- | --- |
| **Aboriginal and Torres Strait Islander histories and cultures** | **Asia and Australia’s engagement with Asia** | **Sustainability** |
|  |  | X |

## **General capabilities (v9)** [Read more…](https://www.australiancurriculum.edu.au/f-10-curriculum/general-capabilities/)

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Literacy** | **Numeracy** | **Digital Literacy** | **Critical and Creative Thinking** | **Ethical Understanding** | **Personal and Social capability** | **Intercultural Understanding** |
| X | X | X |  |  |  |  |

**Links to Digital Literacy continuum (v9): Level 3**

Depending on the year level this activity is being used with, adjust content to the appropriate level;
for example, Level 1, 2, 4.

|  |
| --- |
| **Practising digital safety and wellbeing** |
| Manage online safety* report negative or harmful online behaviour by seeking help from trusted adults
 |  |
| Manage digital privacy and identity* identify their digital footprint (personal data stored by online tools). Recognise their digital identity represents them online and can give a negative impression
* give and seek consent before sharing online with peers and trusted adults
 |  |
| Manage digital wellbeing* follow an agreed code of conduct for the healthy use of digital tools
 |  |
| **Investigating**  |
| Locate information* locate information through search engines and in documents by applying specific search terms, and select and retrieve relevant information from multiple of sources
 | X |
| Acquire and collate data* collect and access data using a range of digital tools and methods in response to a defined question
 | X |
| Interpret data* organise, summarise and visualise data using a range of digital tools to identify patterns and answer questions
 | X |
| **Creating and exchanging** |
| Plan* use familiar digital tools to develop and follow a basic plan to complete a task
 | X |
| Create, communicate and collaborate* use the core features of a range of digital tools to create content and communicate and collaborate with peers and trusted adults
 | X |
| Respect intellectual property* respect products created by someone else by acknowledging when they use them and use strategies such as indicating the source
 | X |
| **Managing and operating** |
| Manage content * save and retrieve content in agreed locations with an appropriate name
 | X |
| Protect content* save and access content in shared folders using their individual school account
 | X |
| Select and operate tools* select and use a range of digital tools to complete tasks and attempt to solve a problem individually and with peers before seeking help
 | X |

**Links to Literacy**

In this task, students have the opportunity to develop literacy by comprehending texts through listening, reading and viewing; composing texts through speaking, writing and creating; and using text, grammar, word and visual knowledge. They practise literacy skills as they navigate, read and review different text types; listen to instructions and to identify and respond to key information in spoken and multimodal texts; interpret, analyse, compose and edit learning area texts; and use language to interact with others. As students define problems, manipulate data, connect and express ideas, and give explanations, they apply their knowledge of text cohesion, grammar and spelling; and use subject-specific vocabulary. Students also identify how choices in visual elements create meaning.

**Links to Numeracy**

In this task, students have the opportunity to develop numeracy by estimating and calculating with whole numbers, recognising and using patterns and relationships, using spatial reasoning, and interpreting statistical information. In using software, materials, tools and equipment, students have opportunities to model, represent, order and use numbers in real-life situations; and to solve everyday addition and share stories. In implementing digital solutions, they collect and record data; identify and describe trends in everyday patterns; interpret information on diagrams; and display data as tables, diagrams and graphs.

## **Links to the HASS learning area (v9)**

|  |
| --- |
| **HASS (Geography)** |
| **Year 3**

|  |
| --- |
| **Knowledge and Understanding** |
| **Geography** | the similarities and differences between places in Australia and neighbouring countries in terms of their natural, managed and constructed features AC9HS3K05 |
| **Inquiry and skills** |
| **Questioning and researching** | develop questions to investigate people, events, places and issues AC9HS3S01 |
| locate, collect and record information and data from a range of sources, including annotated timelines and maps AC9HS3S02 |
| **Interpreting, analysing and evaluating** | interpret information and data displayed in different formats AC9HS3S03 |
| analyse information and data and identify perspectives AC9HS3S04 |
| **Concluding and decision-making** | draw conclusions based on analysis of information AC9HS3S05 |
| propose actions or responses to an issue or challenge that consider possible effects of actions AC9HS3S06 |
| **Communicating** | communicate ideas, sequences, findings and conclusions using relevant termsAC9HS3S07 |

**Year 3 Achievement standard**By the end of Year 3, students describe the causes, effects and contribution of people to change. They identify the significance of events, symbols and emblems to Australia’s identity and diversity. They describe the representation of places within and near Australia. They identify the similarities, differences and connections of people to places across those scales. Students describe the importance of rules and people’s contributions to communities.Students develop questions and locate, collect and record information and data from different sources. They interpret information and data in different formats. They analyse information and data to identify perspectives and they draw conclusions. Students propose actions or responses. They communicate ideas, sequences, findings and conclusions using relevant terms.**Year 4**

|  |
| --- |
| **Knowledge and Understanding** |
| **Geography** | the importance of environments, including natural vegetation and water sources, to animals and people in Australia and on another continent AC9HS4K05 |
| **Inquiry and skills** |
| **Questioning and researching** | develop questions to investigate people, events, places and issues AC9HS4S01 |
| locate, collect and record information and data from a range of sources, including annotated timelines and maps AC9HS4S02 |
| **Interpreting, analysing and evaluating** | interpret information and data displayed in different formats AC9HS4S03 |
| analyse information and data and identify perspectives AC9HS4S04 |
| **Concluding and decision-making** | draw conclusions based on analysis of information AC9HS4S05 |
| propose actions or responses to an issue or challenge that consider possible effects of actions AC9HS4S06 |
| **Communicating** | communicate ideas, sequences, findings and conclusions using relevant terms AC9HS4S07 |

**Year 4 Achievement standard**By the end of Year 4, students describe the diversity of experiences of people in Australia prior to and following 1788. They describe the events and causes of the establishment of the first British colony in Australia. They describe the effects of colonisation on people and environments. Students describe the importance of environments and sustainable allocation and management of resources. They describe the importance and role of local government, community members and laws, and the cultural and social factors that shape identity.Students develop questions and locate, collect and record information and data from a range of sources and formats. They interpret and analyse information and data to identify perspectives and use analysis to draw conclusions. Students propose considered actions or responses. They communicate ideas, sequences, findings and conclusions using a range of relevant terms. |
|  |

## **Appendix 2**

## **Support materials**

## Things to think about

 *Rich questions and discussion starters*

Students with diverse needs

## **Resources**

## **Support materials**

## **Things to think about**

This task includes acquiring and representing data. Digital Technologies, Mathematics and Science have a shared focus on data. For example, data acquisiton and interpretation can include numeric data such as data counted in whole numbers and categorical data such as symbols, charts and groupings.

The term data representation can mean something different in each of these learning areas. Consider what representation can look like in Science, for example students will often use models such as the water cycle to represent their thinking and to help with analysis.

In Mathematics, data representation refers to the way data is symbolised, visually treated or provided in audio. The connections with Mathematics support students to gain the knowledge, understanding and skills that underpin patterns and data visualisation, while Digital Technologies has a specific focus on how digital systems represent data.

## **Rich questions and discussion starters**

Asking the right type of questions helps establish what students know about data and also what they can interpret from them. Use open-ended and probing questions (usually beginning with how, who, when, where and why) to promote critical thinking. For example:

* What patterns or themes emerge from the data?
* What proof exists for …?
* How would \_\_\_\_\_\_\_\_\_\_\_\_\_ affect or influence \_\_\_\_\_\_\_\_\_\_\_?
* How would you translate \_\_\_\_\_\_\_ into visual form?

## **Students with diverse needs**

Students might need **scaffolded support materials**. Adjustments to this task might include:

* placing students in groups with students who can support them with encouraging questions and ideas during the analysis and design phase
* grouping students with peer-mentors who can support their literacy or numeracy needs (including training students who find the task too easy to be effective peer-mentors)
* having students with literacy support needs answer questions using video or recorded voice rather than writing or typing
* using teacher assistants to support literacy demands of a task to enable student to show evidence of digital technologies learning
* encouraging students to communicate via online secure chat for those who rarely speak up during group work
* checking in at frequent intervals to determine students understanding of the task
* focusing on what students can do rather than what they cannot do when providing feedback.

Use professional judgement to provide rapid support when students are struggling with a task due to the literacy or numeracy demands of the task.

Specific adjustments:

**Data acquisition:**

* Collecting data in your field of view from one static, pre-determined or pre-measured location.
* Focus on collecting data in a visual form such as in video, photographic, drawn or tally
mark format.

**Data representation and interpretation:**

* Consider purpose of representation, for example people with low vision may need an auditory representation such as using clapping or sound volume to convey the amount of something.
* Use of concrete materials, for example, 29 counters could be used to represent 29°C. Bundling sticks or maths attribute blocks could also be used.

**Algorithms and implementation:**

* Demonstrate an understanding of the task through use of a simple, drawn flow chart instead of with a digital solution.

Students might need opportunities for **extension**. Adjustments to this task might include:

* the use of micro:bits to collect data on temperature fluctuations in different shade and
non-shade areas in the school
* the design and implementation of digital survey tools to survey members of the school community about the temperature of areas in the school
* giving students training in mentorship and having them support other students with encouraging questions and ideas.

Change the approach to delivery of this task if a student is disengaged or is finding activities too easy or too hard.

See also: <https://evidenceforlearning.org.au/guidance-reports/improving-literacy-in-lower-primary-school/>

Specific adjustments:

**Data acquisition:**

* Expand the times at which you collect data, which will ensure a thorough investigation of the data and allow for variations due to differing weather patterns.

**Data representation and interpretation:**

* Brainstorm ways that people with diverse needs might experience this data, for example how could this be represented to people with low vision? with hearing impairment?

**Algorithms and implementation:**

* Increase complexity requirements of the presentation of the proposed solution.

## **Resources**

Students should be able to explain how different areas of their school might be compared to a digital system that they have had a chance to pull apart, if possible, or view in a broken-down schemata of a computer of other digital devices.

# [Video – Inside your computer – Bettina Bair](https://youtu.be/AkFi90lZmXA)

# [Interactive image – inside a computer with explanatory labels](https://www.thinglink.com/scene/522420444112879618)

# [ACARA document – Classroom ideas: Digital systems](https://www.australiancurriculum.edu.au/media/5901/classroom-ideas-3-4-digital-systems.pdf)

# [Video – What does what in your computer? Computer parts explained](https://youtu.be/ExxFxD4OSZ0)

When discussing systems with students it can be helpful to refer to prior knowledge of what makes up a computer with its individual components of a mouse, a CPU, keyboard, monitor and so on. When discussing the make-up of a computer as a system you can ask students to think of other ‘systems’ that depend on individual parts to make up the whole. For example, a garden is a system, made up of the soil, the microbes and bacteria in the soil, the input from the sun and rain, the plants that thrive in the particular soil type and so on.

The ACARA DTiF project has created a helpful video that explains the make-up of a digital system that can be used in a garden: [youtu.be/TrjCLS-W7aM](https://youtu.be/TrjCLS-W7aM)

Introduce ways of measuring a school environment with apps available on a phone, for example:

* Sound/noise meter: [apps.apple.com/au/app/decibel-x-db-noise-meter-slm/id448155923](https://apps.apple.com/au/app/decibel-x-db-noise-meter-slm/id448155923) measures decibels
* Light meter: [apps.apple.com/au/app/lux-light-meter-free/id1171685960](https://apps.apple.com/au/app/lux-light-meter-free/id1171685960)
* Thermometer: [apps.apple.com/au/app/real-thermometer/id1272049393](https://apps.apple.com/au/app/real-thermometer/id1272049393)
* The Learnometer [gratnellslearnometer.com/](https://gratnellslearnometer.com/) is a digital device that records a range of environmental readings. The students may like to see what each of the different data sets might be and how they could relate to their school environment. Although not linked to this unit for the measurement of outdoor elements such as temperature, it could be a useful exercise to modify the task and explore the use of a digital system for collecting indoor environmental data and making recommendations for improved indoor conditions.

There are also some excellent resources in the CSER MOOCs created for teachers new to Digital Technologies: [csermoocs.adelaide.edu.au/available-moocs](https://csermoocs.adelaide.edu.au/available-moocs)

Assessment and further resources are available from the Digital Technologies Hub:

* [Digital Technologies Hub guides and templates](https://www.digitaltechnologieshub.edu.au/teachers/assessment/guides-and-templates)

## **Appendix 3**

## **Digital systems task planning template**

This template is a suggested step-by-step approach that teachers might use to consider whether *all* or *any* of these links apply to an assessment task they develop themselves to better reflect the learning needs of their students and the context of their classroom and school.

**Planning template suggested approach**

Below is a broad outline of how to use the assessment task planning template on the following pages. It reflects the work of Wiggins and McTighe (2012) on Understanding by Design, which features a backward design approach.

1. Begin with Digital Technologies:
	1. determine the aspects of the achievement standard that will be the focus of the task
	2. highlight the relevant aspects of the standard
	3. identify what knowledge and skills students will need in order to demonstrate the achievement standards (content descriptions)
	4. identify the strands and sub-strands that will need to be addressed.
2. Indicate the core concepts of Digital Technologies that will be addressed and how.
3. Scan the Australian Curriculum to find meaningful connections between:
	1. learning areas (two learning areas helps keep learning focused; avoid more than three)
	2. general capabilities
	3. cross-curriculum priorities.

For example, connections could be established on the grounds of:

* 1. common core concepts, such as data/design/ways of thinking
	2. common words, such as ‘create’, ‘communicate’ and ‘control’
	3. contexts, from learning areas such as Science, HASS, HPE, The Arts.
1. Indicate what general capabilities and cross-curriculum priorities can be meaningfully addressed in the assessment task.
2. Construct a task that allows for discrimination in performance and includes:
	* title
	* band level
	* duration
	* task summary, including prior learning
	* achievement standards and content descriptions
	* task
	* assessment rubric.

Search for xxxx and replace with your own text.

**Title: xxxx**

**Assessment focus:** Australian Curriculum: Digital Technologies
(Digital systems). This task is also linked to xxxx. Depending on modifications made to this task, opportunities may exist to link this task to xxxx and or xxxx.

**Band:** Years 3 and 4 (intended cohort Year xxxx)

**Context:** xxxx

**Duration:** xxxx

**Prior learning:** Students will have:

* participated in a number of design, computational and systems thinking tasks in Years 1–2
* completed activities to enable them to understand xxxx. For example, xxxx.
* xxxx

## **Task summary**

**Key inquiry question:**

* xxxx

**Focus questions:**

* xxxx

**Students will:**

* xxxx

Task features

Students will be asked to complete the following:

* xxxx

**Digital Technologies v9**

**Achievement standard**

By the end of Year 4 students create simple digital solutions and use provided design criteria to check if solutions meet user needs. Students process and represent data for different purposes. They follow and describe simple algorithms involving branching and iteration and implement them as visual programs. Students securely access and use digital systems and their peripherals for a range of purposes, including transmitting data. They use the core features of common digital tools to plan, create, locate and share content, and to collaborate, following agreed behaviours. Students identify their personal data stored online and recognise the risks.

**Content descriptions**

|  |
| --- |
| explore and describe a range of digital systems and their peripherals for a variety of purposes AC9TDI4K01 explore transmitting different types of data between digital systems AC9TDI4K02 recognise different types of data and explore how the same data can be represented differently depending on the purpose AC9TDI4K03 define problems with given design criteria and by co-creating user stories AC9TDI4P01 discuss how existing and student solutions satisfy the design criteria and user stories AC9TDI4P05 use the core features of common digital tools to create, locate and communicate content, following agreed conventions AC9TDI4P06 use the core features of common digital tools to share content, plan tasks, and collaborate, following agreed behaviours, supported by trusted adults AC9TDI4P07  |

**Mathematics v9**

**Year 3 Achievement standard**

By the end of Year 3, students order and represent natural numbers beyond 10 000. They partition, rearrange and regroup two- and three-digit numbers in different ways to assist in calculations. Students use and extend single-digit addition and related subtraction facts, and apply additive strategies to model and solve problems involving two- and three-digit numbers. They model situations and solve problems involving single-digit multiplication and division, recalling multiplication facts for twos, threes, fives and tens, and using a range of strategies. Students represent unit fractions and their multiples in different ways. They make estimates and determine the reasonableness of financial and other calculations. Students find unknown values in number sentences involving addition and subtraction. They follow and create algorithms to investigate numbers.

Students use familiar metric units when estimating, comparing and measuring the attributes of objects and events. They identify angles as measures of turn and compare them to right angles. Students communicate estimates and measures of duration using formal units of time. They represent money values in different ways. Students make, compare and classify objects using key features. They interpret and create two-dimensional representations of environments.

Students conduct guided statistical investigations involving categorical and discrete numerical data, and interpret their results in terms of the context. They record, represent and compare data they have collected. Students conduct repeated chance experiments and discuss variation in results.

**Year 3 Content descriptions [**add as required**]**

|  |
| --- |
| x |

**Year 4 Achievement standard**

By the end of Year 4, students use their understanding of place value to represent tenths and hundredths in decimal form and to multiply natural numbers by multiples of 10. They model financial and other situations, formulating and solving the problem using number sentences, and interpret results in terms of the situation. Students use addition and multiplication facts to add and subtract, multiply and divide numbers efficiently. They choose rounding and estimation strategies to determine whether results of calculations are reasonable. Students use the properties of odd and even numbers. They recognise equivalent fractions and make connections between fraction and decimal notations. Students count and represent fractions on a number line. They find unknown values in numerical equations involving addition and subtraction. Students follow and create algorithms that generate sets of numbers and identify emerging patterns.

They use scaled instruments and appropriate units to measure length, mass, capacity and temperature. Students measure and approximate perimeters and areas. They convert between units of time when solving problems involving duration. Students compare angles relative to a right angle using angle names. They represent and approximate complex shapes and objects in the environment. Students create and interpret grid reference maps. They identify line and rotational symmetry in plane shapes and create symmetrical patterns.

Students create many-to-one data displays, assess the suitability of displays for representing data and discuss the shape of distributions and variation in data. They use surveys and digital tools to generate categorical or discrete numerical data in statistical investigations and communicate their findings in context. Students order the outcomes of chance events in terms of likelihood and identify whether outcomes are independent or dependent.

**Year 4 Content descriptions [**add as required**]**

|  |
| --- |
| x |

## **Digital Technologies Content strands and sub-strands (v9)** [X any that apply]

|  |  |
| --- | --- |
| **Digital Technologies knowledge and understanding** | **Digital Technologies processes and production skills** |
| Digital systems  |  | Creating digital solutions by: |  |
| Representation of data |  | * investigating and defining
 |  |
|  | * generating and designing
 |  |
| * producing and implementing
 |  |
| * evaluating
 |  |
| * collaborating and managing
 |  |

## **Links to Technologies core concepts (v9)** [X any that apply]

|  |  |  |
| --- | --- | --- |
| Creating preferred futures | Creating preferred futures is the overarching core concept. It involves identifying compelling visions of the future and making considered design decisions taking into account diversity; ethics; and economic, environmental and social sustainability factors. This overarching core concept is developed through the Technologies core concepts. |  |
| Systems | Systems comprise the structure, properties, behaviour and interactivity of people and components (inputs, processes and outputs) within and between natural, managed, constructed and digital environments.  |  |
| Data | Data can be acquired, interpreted and represented to help inform decision-making and can be manipulated, stored and communicated by digital systems.  |  |
| Interactions and impact | Interactions and impact need to be considered when creating solutions; this involves examining the relationships between components of technologies systems, sustainability and the effects of design decisions on users.  |  |
| Systems thinking  | Systems thinking helps people to think holistically about the interactions and interconnections that shape the behaviour of systems.  |  |
| Computational thinking | Computational thinking helps people to organise data logically by breaking down problems into parts; defining abstract concepts; and designing and using algorithms, patterns and models.  |  |
| Design thinking | Design thinking helps people to empathise and understand needs, opportunities and problems; generate, iterate and represent innovative, user-centred ideas; and analyse and evaluate those ideas.  |  |
| Technologies processes and production skills | Technologies processes and production skills help people to safely create solutions for a range of purposes and involve investigating and defining, generating and designing, producing and implementing, evaluating, and collaborating and managing.  |  |
| Project management skills | Project management skills help people to successfully and efficiently plan, manage and complete projects to meet identified design criteria.  |  |
| Enterprise skills and innovation | Enterprise skills and innovation helps people to identify opportunities to take action and create change; follow through on initiatives; and generate new ideas, processes and solutions.  |  |

**Links to the Digital Technologies core concepts (v9)** [X any that apply and provide contextual details.]

The core conceptsthat underpin the Digital Technologies curriculum establish a way of thinking about problems, opportunities and digital systems and provide a framework for knowledge and practice. (Colour coding is based on the v8.4 [Australian Computing Academy scheme](https://aca.edu.au/#what-is-the-digital-technologies-curriculum).)

|  |  |  |  |
| --- | --- | --- | --- |
|  | **digital systems**  | processing data in binary, made up of hardware, controlled by software, and connected to form networks  |  |
|  | **data representation**  | data being represented and structured symbolically for storage, use and communication, by people and in digital systems  |  |
|  | **data acquisition\***  | numerical, categorical or structured values acquired or calculated to create information  |  |
|  | **data interpretation\*** | extracting meaning from data  |  |
|  | **abstraction** | reducing complexity by hiding details so that the main idea, problem or solution can be defined and focus can be on a manageable number of aspects  |  |
|  | **specification** | defining a problem precisely and clearly, identifying the requirements, and breaking the problem into manageable pieces  |  |
|  | **algorithms** | the precise sequences of steps and decisions needed to solve a problem, often involving iterative (repeated) processes  |  |
|  | **implementation** | the automation of an algorithm, typically by writing a computer program or using appropriate software  |  |
|  | **privacy and security** | the protection of data when it is stored or transmitted through digital systems |  |

\*Through Mathematics content

## **Cross-curriculum priorities** [Read more…](https://www.australiancurriculum.edu.au/f-10-curriculum/cross-curriculum-priorities/) [X any that apply.]

|  |  |  |
| --- | --- | --- |
| **Aboriginal and Torres Strait Islander histories and cultures** | **Asia and Australia’s engagement with Asia** | **Sustainability** |
|  |  | X |

## **General capabilities (v9)** [Read more…](https://www.australiancurriculum.edu.au/f-10-curriculum/general-capabilities/) [X any that apply.]

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Literacy** | **Numeracy** | **Digital Literacy** | **Critical and Creative Thinking** | **Ethical Understanding** | **Personal and Social capability** | **Intercultural Understanding** |
|  |  |  |  |  |  |  |

**Links to Digital Literacy continuum (v9): Level [**X**]**

[X any that apply. Add relevant descriptions]

Depending on the year level this activity is being used with, adjust content to the appropriate level;
for example, Level 1, 2, 3, 4.

|  |
| --- |
| **Practising digital safety and wellbeing** |
| Manage online safety* x
 |  |
| Manage digital privacy and identity* x
 |  |
| Manage digital wellbeing* x
 |  |
| **Investigating**  |
| Locate information* x
 |  |
| Acquire and collate data* x
 |  |
| Interpret data* x
 |  |
| **Creating and exchanging** |
| Plan* x
 |  |
| Create, communicate and collaborate* x
 |  |
| Respect intellectual property* x
 |  |
| **Managing and operating** |
| Manage content * x
 |  |
| Protect content* x
 |  |
| Select and operate tools* x
 |  |

**Links to Literacy and Numeracy**

Depending on the year level this activity is being used with, adjust content to appropriate level.

Links to Literacy

Xxxx

Links to Numeracy

xxxx

## **Links to the** XXXX **learning area**

xxxx