**Australian Curriculum:
Digital Technologies**

**Years 5–6**

**Sample assessment task**

 **Staying fit, healthy and sun-safe**

**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: Digital systems – Staying fit, healthy and sun-safe

**Assessment focus:** Australian Curriculum: Digital Technologies (Digital systems – investigate the main internal components of common digital systems and their function). This task is also linked to Mathematics, Humanities and Social Sciences (HASS) and Health and Physical Education. Depending on modifications made, opportunities may exist to link this task to English.

**Band:** Years 5 and 6 (intended cohort Year 5)

**Context:** How and why are digital systems used? (Integrating Digital Technologies, Mathematics and HASS)

**Duration:** 4–6 weeks (depending on the task)

**Prior learning:** Students will have:

* explored and described a range of digital systems with peripheral devices for different purposes
* explored transmitting different types of data between digital systems
* discussed how existing solutions satisfy the design criteria and user stories
* determined the importance of environments, including natural vegetation, to animals and people
* explored maps including online maps and become familiar with a compass rose.

Task summary

**Key inquiry question:**

* How do we encourage people to stay safe in the sun, fit and healthy?

**Focus questions:**

* How do we encourage students to exercise at lunchbreaks?
* How do we ensure there is enough shade for students to exercise while staying safe in the sun?

**Students will:**

* understand the components of a digital system
* understand how digital systems connect to form networks
* understand how an information system works with a focus on global positioning systems (GPS) and geographic information systems (GIS)
* compare GIS to determine their features
* consider the ethics of GIS
* use a GIS to determine the level of suitable, shaded exercise space there is in the school
* consider how to increase lunchtime physical activity while staying within sun-safety guidelines
* design and create digital systems to promote physical activity at various shaded locations in the school as part of a lunchtime campaign to promote physical activity
* make recommendations on how to increase shaded spaces in the school (e.g. plant more trees).

Task features

Students will be asked to create a portfolio containing the following:

* a list of examples of digital systems
* an explanation of how a networked digital system works; for example, a global positioning system (GPS)
* a list of features found in geographic information systems (GIS)
* a comparison of the similarities and differences between two GIS and an explanation of which features are available in GIS that are not present with traditional paper maps
* a screenshot of Scribble Maps [www.scribblemaps.com](http://www.scribblemaps.com/) showing a polygon drawn around the perimeter of the school with an overlay showing the shaded areas of the school which could be used for lunchtime play
* a design for data acquisition to determine which shaded areas are used at lunchtime
* a collation of data showing which shaded areas are used at lunchtime
* a design for a digital system which would encourage physical activity in shaded spaces
* an explanation of how the digital system works.

An optional task is to build the digital system and implement the lunchtime activity stations.

Background information

**Teacher guidance and support**

An accompanying PowerPoint slide deck (Digital systems 5–6 presentation materials) steps through the process of this task.

This icon appears on PowerPoint slides to indicate an assessment component which could be added to the assessment portfolio and is intended as formative assessment.

Alternatively, a class discussion could be held to gauge understanding of a topic.

This icon will appear when class discussions on a topic are encouraged as
formative assessment.

A number next to the icon indicates that a summary of group discussion could be recorded in the assessment portfolio as evidence of learning. It is also shown with a number next to it when group work forms part of the summative task which should be recorded in the assessment portfolio.

This icon shows work which needs to be completed individually on a device and added
to the portfolio as part of the summative task.

The PowerPoint slide deck gives an overview with guiding questions following this sequence:

* Systems
* Digital systems, including networks
* Networked digital systems
* Geographic information systems
* Using geographic information systems to gather data.

*An extra element could be added where students use digital systems to acquire data on which shaded spots are actually used in the school during break time. For example, an interactive poster could be attached to a Makey Makey and a computer. When students touch the spot on the poster, they ‘check in’ to the shaded area which adds one to the data acquisition software on a computer.*

* Designing digital systems to create solutions – The premise of this part is that students work in groups to design their own digital systems to promote fitness within a small space in the shade. Each solution would be unique and could be designed for equipment students have access to. Examples of opportunities to design digital systems are listed below and links to examples are provided in teacher resources section, page 22 of this document. Design:
* an egg-and-spoon race that uses a micro:bit
* a hot potato game using a Sphero (tutorial available)
* and create a dance mat using a Makey Makey
* a game that uses the camera on a computer as an input where the player has to move around to reach virtual targets
* a follow the leader game for a Dash robot (tutorial available)
* a mini putt-putt game with a Makey Makey and a timer
* an obstacle course for an EV3 robot that includes people as elements in the course (e.g. child jumping on the spot, another child turning around on the spot)
* a bouncy ball counter for the micro:bit.

Links to the Australian Curriculum v9

Table 1 shows the related Australian Curriculum version 9 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 (v9)

|  |  |
| --- | --- |
| **Digital Technologies*****Achievement standard***Aspects addressed by this task are highlighted. | By the end of Year 6 students develop and modify digital solutions, and define problems and evaluate solutions using user stories and design criteria. They process data and show how digital systems represent data. Students design algorithms involving complex branching and iteration and implement them as visual programs including variables. They securely access and use multiple digital systems and describe their components and how they interact to process and transmit data. Students select and use appropriate digital tools effectively to plan, create, locate and share content, and to collaborate, applying agreed conventions and behaviours. They identify their digital footprint and recognise its permanence. Note: unhighlighted text indicates optional parts of the assessable elements of the task in particular designing solutions. |
| ***Strands and sub-strands*** | Digital Technologies knowledge and understanding * Digital systems

Digital Technologies processes and production skills * Investigating and defining
* Evaluating
* Collaborating and managing
 |
| ***Content descriptions*** | * investigate the main internal components of common digital systems and their function

AC9TDI6K01 * examine how digital systems form networks to transmit data AC9TDI6K02
* define problems with given or co-developed design criteria and by creating user stories

AC9TDI6P01 * evaluate existing and student solutions against the design criteria and user stories and their broader community impact AC9TDI6P06
* select and use appropriate digital tools effectively to create, locate and communicate content, applying common conventions AC9TDI6P07
* select and use appropriate digital tools effectively to share content online, plan tasks and collaborate on projects, demonstrating agreed behaviours AC9TDI6P08
 |
| ***Technologies core concepts*** | * preferred futures
* project management
* systems
* data
* systems thinking
* computational thinking
* design thinking
* interactions and impact
 | ***Digital Technologies core concepts***  | * abstraction
* digital systems
* data acquisition\*
* data interpretation\*
* specification
 |
| ***General capabilities*** | * Creative and Critical Thinking
* Digital Literacy
* Personal and Social Capability
* Literacy
* Numeracy
 |
| ***Cross-curriculum priorities*** | * Sustainability
 | ***Learning area or subject connections*** | * HASS (Geography)
* Health and Physical Education
 |

**\*** \*Through Mathematics content descriptions

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

|  |  |
| --- | --- |
| **Mathematics*****Year 5 Achievement standard***Aspects addressed by this task are highlighted. | By the end of Year 5, students use place value to write and order decimals including decimals greater than one. They express natural numbers as products of factors and identify multiples. Students order and represent fractions with the same or related denominators, and add and subtract fractions with the same denominator. They represent common percentages and connect them to their fraction and decimal equivalents. Students use multiplication facts and efficient calculation strategies to multiply large numbers by one- and two-digit numbers and divide by single-digit numbers. They check the reasonableness of their calculations using estimation. Students model financial and other situations, formulating and solving problems, choosing arithmetic operations and interpreting results in terms of the situation. They apply properties of numbers and operations to find unknown values in numerical equations involving multiplication and division. Students create and use algorithms to identify and explain patterns in the factors and multiples of numbers. They choose and use appropriate metric units to measure the attributes of length, mass and capacity, and to solve problems involving perimeter and area. Students convert between 12- and 24-hour time. They estimate, construct and measure angles in degrees. Students use grid coordinates to locate and move positions. They connect objects to their two-dimensional nets. Students perform and describe the results of transformations and identify any symmetries. They plan and conduct statistical investigations that collect ordinal and discrete numerical data using digital tools. Students identify the mode and interpret the shape of distributions of data in context. They interpret and compare data represented in line graphs. Students conduct repeated chance experiments, list the possible outcomes, estimate likelihoods and make comparisons between those with and without equally likely outcomes.  |
| ***Year 6 Achievement standard***Aspects addressed by this task are highlighted. | By the end of Year 6, students use integers to represent points on a number line and in the Cartesian plane. They solve problems using the properties of prime, composite and square numbers. Students order common fractions, giving reasons, and add and subtract fractions with related denominators. They operate with decimals and connect decimal representations to the metric system. Students solve problems involving finding a fraction, decimal or percentage of a quantity and use estimation to find approximate solutions to problems involving rational numbers and percentages. They model financial and other situations, formulating and solving the problem, and justifying choices. Students find unknown values in numerical equations involving combinations of arithmetic operations. They identify and explain rules used to create growing patterns. Students create and use algorithms to generate sets of numbers, using a rule. They interpret and use timetables. Students convert between common units of length, mass and capacity. They use the formula for the area of a rectangle and angle properties to solve problems. Students identify the parallel cross-section for right prisms. They create tessellating patterns using combinations of transformations. Students locate an ordered pair in any one of the four quadrants on the Cartesian plane. They compare distributions of discrete and continuous numerical and ordinal categorical data sets as part of their statistical investigations, using digital tools. Students critique arguments presented in the media based on statistics. They assign probabilities using fractions, decimal and percentages. Students conduct simulations using digital tools, to generate and record the outcomes from many trials of a chance experiment. They compare observed frequencies to the expected frequencies of the outcomes of chance events.  |
| ***Strands*** | * Space
* Statistics
 |
| ***Year 5 Content descriptions*** | * acquire, validate and represent ordinal and discrete numerical data using software including spreadsheets; discuss and report on data distributions in terms of highest frequency (mode) and shape, in the context of the data AC9M5ST01
* plan and conduct statistical investigations by posing questions or identifying a problem and collecting relevant data; choose appropriate displays and interpret the data; communicate findings within the context of the investigation AC9M5ST03
 |
| ***Year 6 Content descriptions*** | * interpret and compare ordinal categorical, discrete and continuous numerical data sets using comparative displays or visualisations and digital tools; compare distributions in terms of mode, range and shape AC9M6ST01
* plan and conduct statistical investigations by posing and refining questions or identifying a problem and collecting relevant data; analyse and interpret the data and communicate findings within the context of the investigation AC9M6ST03
 |

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** |
| They securely access and use multiple digital systems and describe their components and how they interact to process and transmit data. | * Students explain the fundamentals of how geographic information systems (GIS) work to help us locate information on a map.
* Students explain the fundamentals of how GPS works and how satellites interact with digital systems to form connected global networks.
 |
| They process data  | * Students acquire and analyse data from GIS to determine the level of shade in their school to help with planning and development of a digital system that promotes physical activity in the shade.
 |
| Students select and use appropriate digital tools effectively to plan, create, locate and share content, and to collaborate, applying agreed conventions and behaviours. | * Students interact with GIS, acquire, analyse and visualise data to plan digital solutions to lack of shade in the school. Student work collaboratively and propose locations in the school to grow more shade trees.
 |
| students develop digital solutions, and define problems and evaluate solutions using user stories and design criteria | * Students design digital systems to promote physical activity to enable students to stay fit and healthy.
 |
| **Mathematics** |
| **Year 5**Students use grid coordinates to locate and move positions. | * Students interpret historic maps using grid coordinates to locate places and move positions
 |
| They plan and conduct statistical investigations that collect ordinal and discrete numerical data using digital tools.  | * Students collect data on the number of plants in the school and conduct small-scale surveys to determine the needs of other students
 |
| Students identify the mode and interpret the shape of distributions of data in context. | * Students analyse the data and determine which location and plant type is most popular for planting.
 |
| **Year 6**They compare distributions of discrete and continuous numerical and ordinal categorical data sets as part of their statistical investigations, using digital tools. | * Students analyse survey data and online map data using spreadsheets or tables.
 |

Assessment rubric

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

| **Relevant sections of the Digital Technologies achievement standard** | **Below standard****Students:** | **At standard****Students:** | **Above standard****Students:** |
| --- | --- | --- | --- |
| **Digital systems** They securely access and use multiple digital systems and describe their components and how they interact to process and transmit data. | * recognise that geographic information systems (GIS) are online maps but will not understand that they can be used to locate useful information
* recognise the term GPS but not understand how the components communicate and pinpoint location
 | * explain the fundamentals of how geographic information systems (GIS) work to help us locate information on a map and transmit that data to us using wireless technologies
 | * explain how geographic information systems (GIS) work to help us locate information on a map giving examples of the ways GIS can do things that paper maps cannot do, for example have overlays of bicycle pathways or show how geographic environments have changed over time.
* explain how GPS works and how satellites interact with digital systems to form interconnected global networks
 |
| They process data  | * enter some data into a table
 | * transfer data from GIS to a spreadsheet or table and organise it for statistical analysis (Mathematics component)
 | * transfer data from GIS to a spreadsheet and automate data analysis using formulae
 |
| **Specification (Defining)**define problems using user stories and design criteria.  | * explore GIS.
* miss important connections between data and end users so are unable to formulate the problem in a way that would enable a digital solution to be designed.
 | * collect and analyse data from GIS to determine the level of shade in their school
* define the problem of lack of shaded spaces for sun-safe exercise in the school
* determine criteria for success of addressing the problem
 | * make links between the data and the usable shade in the school and use the data to thoughtfully inform decisions around designing solutions to promote sun-safe physical activity.
* take into account data and functional requirements when determining their success criteria using decomposition and pattern recognition and consider the needs of the end user.
 |
| **Algorithms (Designing)**Students design algorithms involving complex branching and iteration  | * design simple digital solutions without considering repetition in their algorithms.
* do not show evidence of consideration of user needs in their designs.
 | * design digital systems that incorporate decision-making and repetition to promote physical activity
* explain how their design will meet the needs of the users (school community).
 | * design digital systems that incorporate efficient programming constructs including decision-making, repetition and functions to promote physical activity.
* take into account user needs which they incorporate into user interface designs
* explain how their design will meet the needs of the school community and make further recommendations for improvement of general wellbeing through design of new shade structures/spaces.
 |
| **Implementing (coding)*(optional)****and implement them as visual programs including variables.* | * may attempt to build and or program their solution.\*
 | * iteratively build and visually program their digital solutions.\*
 | * iteratively build and visually program their digital solutions and amend their designs in response to user feedback.\*
 |
| **Collaborating and managing**Students select and use appropriate digital tools effectively to plan, create, locate and share content, and to collaborate, applying agreed conventions and behaviours. | * interact with members of their group with limited understanding of why they are gathering data and what makes data collection invalid
 | * ensure the data they collect is valid
* work collaboratively to plan, design *and create\** digital systems
 | * ensure the data they collect is valid and use the data to inform the designs of their digital solutions.
* work collaboratively to plan, design *and create* digital systems to meet the needs of their school community. Students may take on specific roles in the group to ensure the task is completed on time.
 |
| **Evaluating** evaluate solutions using user stories and design criteria. | make recommendations for tree planting without reference to user stories and design criteria | revisit user stories and design criteria to ensure recommendations for tree planting meet user needs and design criteria | provide justification for choice of location for tree planting citing user stories and design criteria |

\*optional part of task

| **Relevant sections of the Mathematics achievement standard** | **Below standard****Students:** | **At standard****Students:** | **Above standard****Students:** |
| --- | --- | --- | --- |
| **Year 5 Space**Students use grid coordinates to locate and move positions. | * Students interact with historic maps
 | * Students interpret historic maps using grid coordinates to locate places and move positions
 | * Students transfer understanding of grid coordinates on historic maps and their use to locate places and move positions to new situations
 |
| **Year 5 Statistics**They plan and conduct statistical investigations that collect ordinal and discrete numerical data using digital tools.  | * interact with GIS to explore their satellite image of the school
 | * collect and analyse data from GIS to determine the level of shade in their school.
 | * collect and analyse data from GIS to determine the level of shade in their school and use this data to inform planning and development of a digital systems that promote physical activity in the shade.
* gather data on the popularity of shaded areas to determine usable shaded areas and to inform their design choices for creating digital systems that promote safe physical activity in confined spaces.
 |
| **Year 5 Statistics**Students identify the mode and interpret the shape of distributions of data in context. | * interact with members of their group with limited understanding of why they are gathering data
 | * gather data on the popularity of shaded areas in the school and discuss the data with their group.
 | * make recommendations about ways to improve shaded areas in the school based on the data.
 |
| **Year 6 Statistics**They compare distributions of discrete and continuous numerical and ordinal categorical data sets as part of their statistical investigations, using digital tools. | * enter data into a spreadsheet
 | * analyse survey data and online map data using spreadsheets or tables.
 | * interpret data and make recommendations about ways to improve shaded areas in the school based on the data.
 |

# Appendix 1

# Australian Curriculum links (in detail)

Links to the Australian Curriculum

Digital Technologies v9

Achievement standard

By the end of Year 6 students develop and modify digital solutions, and define problems and evaluate solutions using user stories and design criteria. They process data and show how digital systems represent data. Students design algorithms involving complex branching and iteration and implement them as visual programs including variables. They securely access and use multiple digital systems and describe their components and how they interact to process and transmit data. Students select and use appropriate digital tools effectively to plan, create, locate and share content, and to collaborate, applying agreed conventions and behaviours. They identify their digital footprint and recognise its permanence.

Note: Unhighlighted text indicates optional parts of the assessable elements of the task.

Content descriptions

|  |
| --- |
| investigate the main internal components of common digital systems and their function AC9TDI6K01 examine how digital systems form networks to transmit data AC9TDI6K02 define problems with given or co-developed design criteria and by creating user stories AC9TDI6P01 evaluate existing and student solutions against the design criteria and user stories and their broader community impact AC9TDI6P06 select and use appropriate digital tools effectively to create, locate and communicate content, applying common conventions AC9TDI6P07 select and use appropriate digital tools effectively to share content online, plan tasks and collaborate on projects, demonstrating agreed behaviours AC9TDI6P08 |

Mathematics v9

Year 5 Achievement standard

By the end of Year 5, students use place value to write and order decimals including decimals greater than one. They express natural numbers as products of factors and identify multiples. Students order and represent fractions with the same or related denominators, and add and subtract fractions with the same denominator. They represent common percentages and connect them to their fraction and decimal equivalents. Students use multiplication facts and efficient calculation strategies to multiply large numbers by one- and two-digit numbers and divide by single-digit numbers. They check the reasonableness of their calculations using estimation. Students model financial and other situations, formulating and solving problems, choosing arithmetic operations and interpreting results in terms of the situation. They apply properties of numbers and operations to find unknown values in numerical equations involving multiplication and division. Students create and use algorithms to identify and explain patterns in the factors and multiples of numbers.

They choose and use appropriate metric units to measure the attributes of length, mass and capacity, and to solve problems involving perimeter and area. Students convert between 12- and 24-hour time. They estimate, construct and measure angles in degrees. Students use grid coordinates to locate and move positions. They connect objects to their two-dimensional nets. Students perform and describe the results of transformations and identify any symmetries.

They plan and conduct statistical investigations that collect ordinal and discrete numerical data using digital tools. Students identify the mode and interpret the shape of distributions of data in context. They interpret and compare data represented in line graphs. Students conduct repeated chance experiments, list the possible outcomes, estimate likelihoods and make comparisons between those with and without equally likely outcomes.

Year 5 Content descriptions

|  |
| --- |
| acquire, validate and represent ordinal and discrete numerical data using software including spreadsheets; discuss and report on data distributions in terms of highest frequency (mode) and shape, in the context of the data AC9M5ST01 plan and conduct statistical investigations by posing questions or identifying a problem and collecting relevant data; choose appropriate displays and interpret the data; communicate findings within the context of the investigation AC9M5ST03 |

Year 6 Achievement standard

By the end of Year 6, students use integers to represent points on a number line and in the Cartesian plane. They solve problems using the properties of prime, composite and square numbers. Students order common fractions, giving reasons, and add and subtract fractions with related denominators. They operate with decimals and connect decimal representations to the metric system. Students solve problems involving finding a fraction, decimal or percentage of a quantity and use estimation to find approximate solutions to problems involving rational numbers and percentages. They model financial and other situations, formulating and solving the problem, and justifying choices. Students find unknown values in numerical equations involving combinations of arithmetic operations. They identify and explain rules used to create growing patterns. Students create and use algorithms to generate sets of numbers, using a rule.

They interpret and use timetables. Students convert between common units of length, mass and capacity. They use the formula for the area of a rectangle and angle properties to solve problems. Students identify the parallel cross-section for right prisms. They create tessellating patterns using combinations of transformations. Students locate an ordered pair in any one of the four quadrants on the Cartesian plane.

They compare distributions of discrete and continuous numerical and ordinal categorical data sets as part of their statistical investigations, using digital tools. Students critique arguments presented in the media based on statistics. They assign probabilities using fractions, decimal and percentages. Students conduct simulations using digital tools, to generate and record the outcomes from many trials of a chance experiment. They compare observed frequencies to the expected frequencies of the outcomes of chance events.

Year 6 Content descriptions

|  |
| --- |
| interpret and compare ordinal categorical, discrete and continuous numerical data sets using comparative displays or visualisations and digital tools; compare distributions in terms of mode, range and shape AC9M6ST01plan and conduct statistical investigations by posing and refining questions or identifying a problem and collecting relevant data; analyse and interpret the data and communicate findings within the context of the investigation AC9M6ST03 |

## **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 |

\*optional part of task

## **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 design digital systems that will promote physical activity in shaded places as determined by the data acquired from the geographic information systems*.
 | X |
|  | **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 * *Students acquire and analyse data from geographic information systems to inform the design of digital systems which encourage users to stay fit and healthy.*
 | X |
|  | **data interpretation\*** | extracting meaning from data * *Data help us build understanding of key concepts from other curriculum areas.*
* *The way we present 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 help us.*
* *Students develop an understanding of the purpose of geographic information systems.*
* *Students design digital systems that will promote physical activity in shaded places as determined by the data collected from the geographic information systems*
 | X |
|  | **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 | X |  | X |  |

**Links to Digital Literacy continuum (v9): Level 4**

Depending on the year level this activity is being used with, adjust content to the appropriate level;
for example, Level 2, 3, 5.

|  |
| --- |
| **Practising digital safety and wellbeing** |
| Manage online safety* report negative or harmful online behaviour to trusted adults and know how to report it in online tools and recognise when to step away from negative online social interactions
 |  |
| Manage digital privacy and identity* recognise the permanence of their digital footprint and digital identity and the associated risks including to their reputation
* give and seek consent before sharing online in trusted groups
 |  |
| Manage digital wellbeing* follow an agreed code of conduct for the healthy and productive use of digital tools, considering the impact of tool use on wellbeing
 |  |
| **Investigating**  |
| Locate information* locate information through search engines and in documents by applying specific search terms based on set criteria, and select and retrieve relevant information from multiple sources
 | X |
| Acquire and collate data* collect and access data using a range of digital tools and methods in response to a defined question or problem
 | X |
| Interpret data* analyse and visualise data using a range of digital tools to identify patterns and make predictions
 | X |
| **Creating and exchanging** |
| Plan* select and use digital tools to develop and follow a plan to complete individual tasks and group projects
 | X |
| Create, communicate and collaborate* select and control a variety of features in appropriate digital tools to create content and communicate and collaborate with trusted groups
 | X |
| Respect intellectual property* respect intellectual property by identifying the legal obligations regarding the ownership and appropriate use of products, exploring copyright protocols and applying some referencing conventions
 | X |
| **Managing and operating** |
| Manage content * store content using appropriate names and folders for ease of retrieval
 | X |
| Protect content* protect content when sharing with peers and trusted adults by setting appropriate access controls
 | X |
| Select and operate tools* select and use the core features of digital tools to efficiently complete tasks
* troubleshoot basic problems and identify repetitive tasks to automate
 | X |

## **Links to Literacy**

In this Year 6 task in Digital Technologies, 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 and word knowledge. They practise literacy skills as they navigate, read and review subject-specific texts; listen to instructions and to identify, respond to and interpret information and opinions; compose and edit learning area texts; use language to interact with others; and deliver presentations. As students explain components of digital systems and representation of data, and give presentations, they apply their developing knowledge of the structure and features of learning area texts to comprehend and compose a range of more complex texts for identified purposes; and use subject-specific vocabulary including words that express shades of meaning.

Visit Literacy general capability [https://www.australiancurriculum.edu.au/f-10-curriculum/general-capabilities/literacy/](https://www.australiancurriculum.edu.au/f-10-curriculum/general-capabilities/literacy/%22%20%5Ct%20%22_blank)

## **Links to Numeracy**

In this Year 6 task in Digital Technologies, students have the opportunity to develop numeracy by estimating and calculating with whole numbers, and recognising and using patterns and relationships. In exploring how digital systems represent data – the story of binary – students solve problems and check calculations using efficient mental and written strategies; and identify and describe pattern rules and relationships that help to identify trends.

Visit Numeracy general capability <https://www.australiancurriculum.edu.au/f-10-curriculum/general-capabilities/numeracy/>

Links to learning areas

HASS

|  |
| --- |
| **Year 5 HASS**  |
| By the end of Year 5, students explain the causes for the establishment of the British colony in Australia after 1800. They explain the roles of significant individuals or groups on the development of an Australian colony and the impact of those developments. They explain the influence of people on the characteristics of places and in the management of spaces. Students explain the key values and features of Australia’s representative democracy and how people achieve civic goals. They explain the nature of resources and how they meet needs and wants. Students develop questions and locate, collect and organise information and data from primary and secondary sources. They evaluate sources to determine origin and perspectives. Students evaluate information and data to identify and describe patterns or trends. They suggest conclusions based on evidence. Students consider criteria in proposing actions or responses. They communicate ideas, findings, viewpoints and conclusions using relevant terms and conventions.**Content descriptions**the management of spaces in the Australian landscape including managing severe weather events, such as bushfires, floods, droughts or cyclones, and their consequences AC9HS5K05develop questions to guide investigations about people, events, developments, places and systems AC9HS5S01locate, collect and organise information and data from primary and secondary sources in a range of formats AC9HS5S02evaluate primary and secondary sources to determine origin, purpose and perspectives AC9HS5S03evaluate information and data in a range of formats to identify and describe patterns and trends, or to infer relationships AC9HS5S04develop evidence-based conclusions AC9HS5S05propose actions or responses to issues or challenges and use criteria to assess the possible effects AC9HS5S06 communicate ideas, findings, viewpoints and conclusions using relevant terms and conventions AC9HS5S07 |

|  |
| --- |
| **HPE** |
| By the end of Year 6, students explain how different factors influence identities. They propose strategies to manage emotions, developmental changes and transitions. They propose strategies to demonstrate respect, empathy and inclusion. They explain how stereotypes influence roles and responsibilities. Students explain how communication skills, protective behaviours and help-seeking strategies keep themselves and others safe online and offline. They analyse health information to refine strategies to enhance their own and others’ health, safety, relationships and wellbeing. Students refine and modify movement skills and apply movement concepts across a range of situations. They transfer movement strategies between situations and evaluate the impact on movement outcomes. Students propose strategies to promote physical activity participation that enhance health, fitness and wellbeing. They describe contributions they can make as a group and team member to support fair play and inclusion across a range of movement contexts. **Content descriptions**investigate different sources and types of health information and how these apply to their own and others’ health choices AC9HP6P09investigate how different movement concepts related to effort, space, time, objects and people can be applied to improve movement outcomes AC9HP6M03participate in physical activities that enhance health and wellbeing in natural and outdoor settings, and analyse the steps and resources needed to promote participation AC9HP6M05propose and explain strategies to increase physical activity and reduce sedentary behaviour levels in their lives AC9HP6M06 |

# Appendix 2

Support materials

## Things to think about

 *Rich questions and discussion starters*

Students with diverse needs

Resources

Support materials

Things to think about

Consider how knowledge of sun safety and an awareness of shaded spaces in the school can lead to increased use of shaded spaces for physical activity.

The assessment task is made up of formative and summative assessment items intended to be completed throughout the course of learning.

The support materials contained in the Student task portfolio are intended to be used as a digital document or as a guide to learning to adapt to your own context and the ability of your students. It is not intended to be printed and photocopied.

The PowerPoint can be used as a whole class visual aide or as an individual or small group guide to step students through the assessment task.

## **Rich questions and discussion starters**

**Key inquiry question:**

* How do we encourage people to stay sun-safe, fit and healthy?

**Focus questions:**

* How do we encourage students to exercise at lunchbreaks?
* How do we ensure there is enough shade for students to exercise while staying sun-safe?

**Some discussion starters could be:**

* How can we keep people active at lunchtime but still remember sun-safe practices?
* How could we develop digital systems to promote physical activity?
* How can we use GISs to determine how many shaded areas are in our school?

**During the teaching and learning cycle, sample questions could include:**

**Comprehension**:

* What would be an example of an digital system? (Illustrating)

**Application**:

* How can you use a GIS to find out how much usable shade is in our school?

**Analysis**:

* What are the most important elements of a GIS?
* What parts of *GIS sample 1* would be similar to/different from *GIS sample 2*?
* How can we determine which is cooler – natural shade from trees or built shade structures?

**Synthesis:**

* How can an awareness of the shaded areas of our school through the use of a GIS be combined with a digital system to create activities that promote fun and fitness?

**Evaluation:**

* How would you evaluate the ethical (moral) implications or consequences of number plates or faces being visible on a GIS?
* How would you judge the accuracy or validity of the data we have collected via a GIS?

**Creative thinking:**

* What could be invented to make people want to exercise in shaded areas at lunchtimes?
* What can we do to increase the natural shade in our school?
* See [www.lavc.edu/profdev/library/docs/promotethink.aspx](https://acaraonline.sharepoint.com/sites/digital-technologies-in-focus/Administration/Planning/Assessment%20task%20trials/Systems%20assessment%20tasks/5-6/www.lavc.edu/profdev/library/docs/promotethink.aspx)

## **Students with diverse needs**

Students may 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.

Students might need opportunities for **extension**. Adjustments for such students might include:

* The use of micro:bits or Arduino 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 shade, fitness and values.
* Give capable students training in mentorship and have 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, adopt a different approach to teaching the same aspect of literacy or numeracy.

See also: [evidenceforlearning.org.au/guidance-reports/improving-literacy-in-upper-primary](https://evidenceforlearning.org.au/guidance-reports/improving-literacy-in-upper-primary)

Resources

* Student PowerPoint (Digital systems 5-6 presentation)
* Student task portfolio guide
* Marking guide - rubric

## **Useful weblinks**

* National Geographic introduction to GIS [www.nationalgeographic.org/activity/introduction-gis/](http://www.nationalgeographic.org/activity/introduction-gis/)
* She Maps drone and Geospatial information [www.shemaps.com/](https://shemaps.com/) and [www.learnwithorbit.com/map-my-school/](https://learnwithorbit.com/map-my-school/)
* Australian Geography Teachers Association [www.agta.asn.au/Resources/GeographicalEducation/geoged-v32-2019.php](http://www.agta.asn.au/Resources/GeographicalEducation/geoged-v32-2019.php)
* Aligning mapping skills with digitally connected childhoods to advance the development of Spatial Cognition and ways of thinking in primary school Geography [www.tinyurl.com/y4j6m59f](http://www.tinyurl.com/y4j6m59f)
* Integrating GIS in experiential fieldwork [www.tinyurl.com/y6loshxg](http://www.tinyurl.com/y6loshxg)
* Geography and STEM [www.tinyurl.com/y3o8bmcw](http://www.tinyurl.com/y3o8bmcw)
* Google maps [wwww.maps.google.com/help/maps/education/](https://maps.google.com/help/maps/education/)
* Google Earth Education [www.google.com/earth/education/](http://www.google.com/earth/education/)
* Scribble Maps www.Scribble Maps.com/
* National Geographic Mapmaker [www.mapmaker.nationalgeographic.org/](http://www.mapmaker.nationalgeographic.org/)
* National Map: an online map-based tool to allow easy access to spatial data from Australian government agencies.[www.nationalmap.gov.au/](http://www.nationalmap.gov.au/)
* ESRI Australia [www.esriaustralia.com.au/gis-for-schools](https://esriaustralia.com.au/gis-for-schools)

## **Digital solution idea links and examples**

* micro:bit egg-and-spoon race (tutorial [makecode.microbit.org/examples/egg-and-spoon](https://makecode.microbit.org/examples/egg-and-spoon))
* micro:bit bouncy ball count (example tutorial for this step counter could be modified to be worn on the wrist [www.makecode.microbit.org/projects/step-counter](https://makecode.microbit.org/projects/step-counter))
* Spheros hot potato (tutorial available at [www.edu.sphero.com/cwists/preview/149x](http://www.edu.sphero.com/cwists/preview/149x) )
* Scratch with camera input – catch virtual things using sensing blocks (example tutorial videos [www.youtube.com/watch?v=23xstN6hgKI](https://acaraonline.sharepoint.com/sites/digital-technologies-in-focus/Administration/Planning/Assessment%20task%20trials/Systems%20assessment%20tasks/5-6/www.youtube.com/watch?v=23xstN6hgKI) and [www.youtube.com/watch?v=8vHEqVdWn08](https://acaraonline.sharepoint.com/sites/digital-technologies-in-focus/Administration/Planning/Assessment%20task%20trials/Systems%20assessment%20tasks/5-6/www.youtube.com/watch?v=8vHEqVdWn08))
* Dash robot follow the leader (see [www.makewonder.com/play/ideas/19/](https://www.makewonder.com/play/ideas/19/)) and (tutorial video [www.youtube.com/watch?v=X1qQGry9\_iw](https://acaraonline.sharepoint.com/sites/digital-technologies-in-focus/Administration/Planning/Assessment%20task%20trials/Systems%20assessment%20tasks/5-6/www.youtube.com/watch?v=X1qQGry9_iw))
* Makey Makey dance mat (tutorial [www.instructables.com/id/Makey-Makey-Dance-Revolution/](http://www.instructables.com/id/Makey-Makey-Dance-Revolution/))
* Makey Makey data collection – score (example tutorial [www.makeymakey.com/blogs/how-to-instructions/makey-your-own-exit-ticket-or-data-tracker](https://makeymakey.com/blogs/how-to-instructions/makey-your-own-exit-ticket-or-data-tracker))
* Makey Makey mini putt putt with timer (example video [www.youtube.com/watch?v=uU9YeoIKkYA](http://www.youtube.com/watch?v=uU9YeoIKkYA))
* Lego EV3 with people as elements in obstacle course (example tutorial [education.lego.com/en-us/lessons/mindstorms-ev3/object-detection](https://education.lego.com/en-us/lessons/mindstorms-ev3/object-detection))

# 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.
4. Indicate what general capabilities and cross-curriculum priorities can be meaningfully addressed in the assessment task.
5. 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: Digital systems – xxx**

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

**Band:** Years 5 and 6 (intended cohort Year X)

**Context:** xxxx

**Duration:** Dependent on how the task is to be implemented

**Prior learning:** Students will have:

* 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 6 students develop and modify digital solutions, and define problems and evaluate solutions using user stories and design criteria. They process data and show how digital systems represent data. Students design algorithms involving complex branching and iteration and implement them as visual programs including variables. They securely access and use multiple digital systems and describe their components and how they interact to process and transmit data. Students select and use appropriate digital tools effectively to plan, create, locate and share content, and to collaborate, applying agreed conventions and behaviours. They identify their digital footprint and recognise its permanence.

Content descriptions

|  |
| --- |
| investigate the main internal components of common digital systems and their function AC9TDI6K01 examine how digital systems form networks to transmit data AC9TDI6K02 define problems with given or co-developed design criteria and by creating user stories AC9TDI6P01 evaluate existing and student solutions against the design criteria and user stories and their broader community impact AC9TDI6P06 select and use appropriate digital tools effectively to create, locate and communicate content, applying common conventions AC9TDI6P07 select and use appropriate digital tools effectively to share content online, plan tasks and collaborate on projects, demonstrating agreed behaviours AC9TDI6P08 |

Mathematics v9

Year 5 Achievement standard

By the end of Year 5, students use place value to write and order decimals including decimals greater than one. They express natural numbers as products of factors and identify multiples. Students order and represent fractions with the same or related denominators, and add and subtract fractions with the same denominator. They represent common percentages and connect them to their fraction and decimal equivalents. Students use multiplication facts and efficient calculation strategies to multiply large numbers by one- and two-digit numbers and divide by single-digit numbers. They check the reasonableness of their calculations using estimation. Students model financial and other situations, formulating and solving problems, choosing arithmetic operations and interpreting results in terms of the situation. They apply properties of numbers and operations to find unknown values in numerical equations involving multiplication and division. Students create and use algorithms to identify and explain patterns in the factors and multiples of numbers.

They choose and use appropriate metric units to measure the attributes of length, mass and capacity, and to solve problems involving perimeter and area. Students convert between 12- and 24-hour time. They estimate, construct and measure angles in degrees. Students use grid coordinates to locate and move positions. They connect objects to their two-dimensional nets. Students perform and describe the results of transformations and identify any symmetries.

They plan and conduct statistical investigations that collect ordinal and discrete numerical data using digital tools. Students identify the mode and interpret the shape of distributions of data in context. They interpret and compare data represented in line graphs. Students conduct repeated chance experiments, list the possible outcomes, estimate likelihoods and make comparisons between those with and without equally likely outcomes.

Year 5 Content descriptions

|  |
| --- |
| acquire, validate and represent ordinal and discrete numerical data using software including spreadsheets; discuss and report on data distributions in terms of highest frequency (mode) and shape, in the context of the data AC9M5ST01 interpret line graphs representing change over time; discuss the relationships that are represented and conclusions that can be made AC9M5ST02plan and conduct statistical investigations by posing questions or identifying a problem and collecting relevant data; choose appropriate displays and interpret the data; communicate findings within the context of the investigation AC9M5ST03create and use algorithms involving a sequence of steps and decisions and digital tools to experiment with factors, multiples and divisibility; identify, interpret and describe emerging patterns AC9M5N10 |

Year 6 Achievement standard

By the end of Year 6, students use integers to represent points on a number line and in the Cartesian plane. They solve problems using the properties of prime, composite and square numbers. Students order common fractions, giving reasons, and add and subtract fractions with related denominators. They operate with decimals and connect decimal representations to the metric system. Students solve problems involving finding a fraction, decimal or percentage of a quantity and use estimation to find approximate solutions to problems involving rational numbers and percentages. They model financial and other situations, formulating and solving the problem, and justifying choices. Students find unknown values in numerical equations involving combinations of arithmetic operations. They identify and explain rules used to create growing patterns. Students create and use algorithms to generate sets of numbers, using a rule.

They interpret and use timetables. Students convert between common units of length, mass and capacity. They use the formula for the area of a rectangle and angle properties to solve problems. Students identify the parallel cross-section for right prisms. They create tessellating patterns using combinations of transformations. Students locate an ordered pair in any one of the four quadrants on the Cartesian plane.

They compare distributions of discrete and continuous numerical and ordinal categorical data sets as part of their statistical investigations, using digital tools. Students critique arguments presented in the media based on statistics. They assign probabilities using fractions, decimal and percentages. Students conduct simulations using digital tools, to generate and record the outcomes from many trials of a chance experiment. They compare observed frequencies to the expected frequencies of the outcomes of chance events.

Year 6 Content descriptions

|  |
| --- |
| interpret and compare ordinal categorical, discrete and continuous numerical data sets using comparative displays or visualisations and digital tools; compare distributions in terms of mode, range and shape AC9M6ST01identify statistically informed arguments presented in traditional and digital media; discuss and critique methods, data representations and conclusions AC9M6ST02plan and conduct statistical investigations by posing and refining questions or identifying a problem and collecting relevant data; analyse and interpret the data and communicate findings within the context of the investigation AC9M6ST03create and use algorithms involving a sequence of steps and decisions that use rules to generate sets of numbers; identify, interpret and explain emerging patterns AC9M6A03 |

## **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 specify 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** |
|  |  |  |

## **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 4** [X any that apply and adjust text as necessary]

Depending on the year level this activity is being used with, adjust content to the appropriate level;
for example, Level 2, 3, 5.

|  |
| --- |
| **Practising digital safety and wellbeing** |
| Manage online safety* report negative or harmful online behaviour to trusted adults and know how to report it in online tools and recognise when to step away from negative online social interactions
 |  |
| Manage digital privacy and identity* recognise the permanence of their digital footprint and digital identity and the associated risks including to their reputation
* give and seek consent before sharing online in trusted groups
 |  |
| Manage digital wellbeing* follow an agreed code of conduct for the healthy and productive use of digital tools, considering the impact of tool use on wellbeing
 |  |
| **Investigating**  |
| Locate information* locate information through search engines and in documents by applying specific search terms based on set criteria, and select and retrieve relevant information from multiple sources
 |  |
| Acquire and collate data* collect and access data using a range of digital tools and methods in response to a defined question or problem
 |  |
| Interpret data* analyse and visualise data using a range of digital tools to identify patterns and make predictions
 |  |
| **Creating and exchanging** |
| Plan* select and use digital tools to develop and follow a plan to complete individual tasks and group projects
 |  |
| Create, communicate and collaborate* select and control a variety of features in appropriate digital tools to create content and communicate and collaborate with trusted groups
 |  |
| Respect intellectual property* respect intellectual property by identifying the legal obligations regarding the ownership and appropriate use of products, exploring copyright protocols and applying some referencing conventions
 |  |
| **Managing and operating** |
| Manage content * store content using appropriate names and folders for ease of retrieval
 |  |
| Protect content* protect content when sharing with peers and trusted adults by setting appropriate access controls
 |  |
| Select and operate tools* select and use the core features of digital tools to efficiently complete tasks
* troubleshoot basic problems and identify repetitive tasks to automate
 |  |

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

Visit Literacy general capability [https://www.australiancurriculum.edu.au/f-10-curriculum/general-capabilities/literacy/](https://www.australiancurriculum.edu.au/f-10-curriculum/general-capabilities/literacy/%22%20%5Ct%20%22_blank)

Links to Numeracy

xxxx

Visit Numeracy general capability <https://www.australiancurriculum.edu.au/f-10-curriculum/general-capabilities/numeracy/>

Links to learning areas

XXXX