**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
		- key concepts
		- key ideas (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 – recognising digital systems and how they can be used to design solutions). This task is also linked to Humanities and Social Sciences (HASS) and Health and Physical Education. Depending on modifications made, opportunities may exist to link this task to Mathematics and/or English.

**Band:** Years 5 and 6

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

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

**Prior learning:** Students will have:

* identified and explored a range of digital systems with peripheral devices for different purposes
* become familiar with a variety of information systems and explained how they have met common personal, school or community needs
* 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 information 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 collection 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
* Information systems
* Networked information systems
* Geographic information systems
* Using geographic information systems to gather data.

*An extra element could be added where students use digital systems to collect 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 collection 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

Table 1 shows the related Australian Curriculum 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*****Achievement standard***Aspects addressed by this task are highlighted. | By the end of Year 6, students explain the fundamentals of digital system components (hardware, software and networks) and how digital systems are connected to form networks. They explain how digital systems use whole numbers as a basis for representing a variety of data types. Students define problems in terms of data and functional requirements and design solutions by developing algorithms to address the problems. They incorporate decision-making, repetition and user interface design into their designs and implement their digital solutions, including a visual program. They explain how information systems and their solutions meet needs and consider sustainability. Students manage the creation and communication of ideas and information in collaborative digital projects using validated data and agreed protocols.Note: unhighlighted text indicates optional parts of the assessable elements of the task in particular designing solutions. |
| ***Strands*** | Digital Technologies knowledge and understanding * Digital systems

Digital Technologies processes and production skills * Collecting, managing and analysing data
* Evaluating
* Collaborating and managing
 |
| ***Content descriptions*** | * Examine the main components of common digital systems and how they may connect together to form networks to transmit data ([ACTDIK014](http://www.scootle.edu.au/ec/search?accContentId=ACTDIK014))
* Acquire, store and validate different types of data, and use a range of software to interpret and visualise data to create information ([ACTDIP016](http://www.scootle.edu.au/ec/search?accContentId=ACTDIP016))
* Explain how student solutions and existing information systems are sustainable and meet current and future local community needs ([ACTDIP021](http://www.scootle.edu.au/ec/search?accContentId=ACTDIP021))
* Plan, create and communicate ideas and information, including collaboratively online, applying agreed ethical, social and technical protocols ([ACTDIP022](http://www.scootle.edu.au/ec/search?accContentId=ACTDIP022))
 |
| ***Key concepts*** | * abstraction
* digital systems
* data collection
* specification
* interactions
* impacts
 | ***Key ideas***  | * Preferred futures
* Project management
* Thinking in Technologies
	+ systems thinking
	+ computational thinking
	+ design thinking
 |
| ***Cross-curriculum priorities*** | * Sustainability
 | ***General capabilities*** | * Creative and Critical Thinking
* Information and Communication Technology (ICT) Capability
* Personal and Social Capability
* Literacy
* Numeracy
 |

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 explain the fundamentals of digital system components (hardware, software and networks). | * Students explain the fundamentals of how geographic information systems (GIS) work to help us locate information on a map.
 |
| Students explain how digital systems are connected to form networks. | * Students explain the fundamentals of how GPS works and how satellites interact with digital systems to form connected global networks.
 |
| They explain how information systems meet needs and consider sustainability. | * Students explain how GIS meet needs.
 |
| Students define problems in terms of data and functional requirements and design solutions to address the problems. | * Students collect 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 design digital systems to promote physical activity to enable students to stay fit and healthy.
 |

Assessment rubric

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

| **Relevant sections of the achievement standard** | **Below standard****Students:** | **At standard****Students:** | **Above standard****Students:** |
| --- | --- | --- | --- |
| **Digital systems** Students explain the fundamentals of digital system components (hardware, software and networks) and how digital systems are connected to form networks. | * 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
* explain the fundamentals of how GPS works
 | * 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
 |
| **Collecting and managing data** Students manage the creation and communication of ideas and information in collaborativedigital projects using validated data and agreed protocols. | * interact with GIS to explore their satellite image of the school
* interact with members of their group with limited understanding of why they are gathering data
 | * collect and analyse data from GIS to determine the level of shade in their school.
* gather data on the popularity of shaded areas in the school and discuss the data with their group.
 | * 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.
* make recommendations about ways to improve shaded areas in the school based on the data.
 |

|  |  |  |  |
| --- | --- | --- | --- |
| **Specification (Defining)**Students define problems in terms of data and functional requirements | * 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)**They incorporate decision-making, repetition and user interface design into their designs | * 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)****Students implement their digital solutions, including a visual program.* | * 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.
 |

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| **Evaluating**They explain how information systems meet needs and consider sustainability.***Optional****: Students explain how their solutions meet needs.* | * explore GIS
* fail to make a connection between the needs of the user and the digital system they are attempting to build
 | * explain how GIS meet needs.
* explain how their digital systems meet needs of their school community
 | * explain how GIS meet needs by considering user traits and identifying which overlays could be useful, for example, the measuring tool could enable the school grounds keeper to determine the area of grass in the school to calculate required amount of ‘lawn food’ to prepare.
* explain how their digital systems meet needs of their school community and make further recommendations of how the digital system can form part of a wider program to promote healthy activity in the school community.
 |
| **Collaborating and managing**Students manage the creation and communication of ideas and information in collaborative digital projects using validated data and agreed protocols. | * 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.
 |

\*optional part of task

# Appendix 1

# Australian Curriculum links (in detail)

Links to the Australian Curriculum

Digital Technologies

Achievement standard

By the end of Year 6, students explain the fundamentals of digital system components (hardware, software and networks) and how digital systems are connected to form networks. They explain how digital systems use whole numbers as a basis for representing a variety of data types.

Students define problems in terms of data and functional requirements and design solutions by developing algorithmsto address the problems. They incorporate decision-making, repetition and user interface design into their designs and implement their digital solutions, including a visual program. They explain how information systems and their solutions meet needs and consider sustainability. Students manage the creation and communication of ideas and information in collaborative digital projects using validated data and agreed protocols.

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

Content descriptions

|  |
| --- |
| Examine the main components of common digital systems and how they may connect together to form networks to transmit data ([ACTDIK014](http://www.scootle.edu.au/ec/search?accContentId=ACTDIK014))Acquire, store and validate different types of data, and use a range of software to interpret and visualise data to create information ([ACTDIP016](http://www.scootle.edu.au/ec/search?accContentId=ACTDIP016))Explain how student solutions and existing information systems are sustainable and meet current and future local community needs ([ACTDIP021](http://www.scootle.edu.au/ec/search?accContentId=ACTDIP021))Plan, create and communicate ideas and information, including collaboratively online, applying agreed ethical, social and technical protocols ([ACTDIP022](http://www.scootle.edu.au/ec/search?accContentId=ACTDIP022)) |

Content strands

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

\*optional part of task

Links to the key ideas

|  |  |  |
| --- | --- | --- |
| **Creating preferred futures** | Students develop solutions to meet needs considering impacts on liveability, economic prosperity and environmental sustainability. | X |
| **Project management** | Students will develop skills to manage projects to successful completion through planning, organising and monitoring timelines, activities and the use of resources. | X |
| **Thinking in Technologies*** Systems thinking
 | Systems thinking is a holistic approach to the identification and solving of problems where the focal points are treated as components of a system, and their interactions and interrelationships are analysed individually to see how they influence the functioning of the entire system. | X |
| * Design thinking
 | Design thinking involves the use of strategies for understanding design needs and opportunities, visualising and generating creative and innovative ideas, planning, and analysing and evaluating those ideas that best meet the criteria for success. | X |
| * Computational thinking
 | Computational thinking is a problem-solving method that is applied to create solutions that can be implemented using digital technologies. It involves integrating strategies, such as organising data logically, breaking down problems into parts, interpreting patterns and models and designing and implementing algorithms. | X |

Read more about the [key ideas in the Australian Curriculum: Technologies](https://www.australiancurriculum.edu.au/f-10-curriculum/technologies/key-ideas/).

Links to the key concepts

The [key concepts](https://www.australiancurriculum.edu.au/f-10-curriculum/technologies/digital-technologies/structure/)that underpin the Digital Technologies curriculum establish a way of thinking about problems, opportunities and information systems and provide a framework for knowledge and practice. (Colour coding is based on the [Australian Computing Academy scheme](https://aca.edu.au/#what-is-the-digital-technologies-curriculum).)

|  |  |  |
| --- | --- | --- |
|  | **abstraction** | underpins all content, particularly the content descriptions relating to the concepts of data representation; and specification; algorithms; and implementation  |
|  | **data collection**  | (properties, sources and collection of data)* *Students collect and analyse data from geographic information systems to inform the design of digital systems which encourage users to stay fit and healthy.*
 | X |
|  | **data representation** | (symbolism and separation) |  |
|  | **data interpretation** | (patterns and contexts) * *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 |
|  | **specification** | (descriptions and techniques)* *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** | (following and describing) |  |
|  | **implementation** | (translating and programming) |  |
|  | **digital systems**  | (hardware, software, and networks and the internet)* *Students design digital systems that will promote physical activity in shaded places as determined by the data collected from the geographic information systems*.
 | X |
|  | **interactions** | (people and digital systems, data and processes)* *Students develop an understanding of the way information systems can be used to help people.*
* *Students design digital systems to be used by people to encourage physical activity in shaded places as determined by the data collected from the geographic information systems.*
 | X |
|  | **impact** | (sustainability and empowerment)* *Students develop an understanding of how geographic information systems can help us to live more sustainably.*
* *Students develop an understanding of how they can design digital systems that can be used to help people.*
 | X |

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

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Literacy** | **Numeracy** | **ICT Capability** | **Critical and Creative Thinking** | **Ethical Understanding** | **Personal and Social Capability** | **Intercultural Understanding** |
| X | X | X | X |  | X |  |

## **Links to ICT Capability continuum: Level 4**

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

|  |
| --- |
| **Applying social and ethical protocols and practices when using ICT** |
| identify the legal obligations regarding the ownership and use of digital products and apply some referencing conventions  | X |
| independently apply strategies for determining and protecting the security of digital information and assess the risks associated with online environments  | X |
| identify the risks to identity, privacy and emotional safety for themselves when using ICT and apply generally accepted social protocols when sharing information in online environments, taking into account different social and cultural contexts  | X |
| explain the main uses of ICT at school, home and in the local community, and recognise its potential positive and negative impacts on their lives | X |
| **Investigating with ICT** |
| use a range of ICT to identify and represent patterns in sets of information and to pose questions to guide searching for, or generating, further information  | X |
| locate, retrieve or generate information using search engines and simple search functions and classify information in meaningful ways | X |
| assess the suitability of data or information using a range of appropriate given criteria  | X |
| **Creating with ICT** |
| use ICT effectively to record ideas, represent thinking and plan solutions  | X |
| independently or collaboratively create and modify digital solutions, creative outputs or data representation/ transformation for particular audiences and purposes | X |
| **Communicating with ICT** |
| select and use appropriate ICT tools safely to share and exchange information and to safely collaborate with others  | X |
| understand that particular forms of computer mediated communications and tools are suited to synchronous or asynchronous and one-to-one or group communications  | X |
| **Managing and operating ICT** |
| select from, and safely operate, a range of devices to undertake specific tasks and use basic troubleshooting procedures to solve routine malfunctions  | X |
| identify, compare and classify basic ICT system components  |  X |
| manage and maintain data on different storage mediums – locally and on networks | 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/>

Visit National Literacy Learning Progression <https://www.australiancurriculum.edu.au/resources/national-literacy-and-numeracy-learning-progressions/national-literacy-learning-progression/>

## **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/>

Visit National Numeracy Learning Progression <https://www.australiancurriculum.edu.au/resources/national-literacy-and-numeracy-learning-progressions/national-numeracy-learning-progression/>

Links to learning areas

HASS

|  |
| --- |
| **HASS**  |
| By the end of Year 6, students explain the significance of an event/development, an individual and/or group. They identify and describe continuities and changes for different groups in the past and present. They describe the causes and effects of change on society. They compare the experiences of different people in the past. Students describe, compare and explain the diverse characteristics of different places in different locations from local to global scales. They describe how people, places, communities and environments are diverse and globally interconnected and identify the effects of these interconnections over time. Students explain the importance of people, institutions and processes to Australia’s democracy and legal system. They describe the rights and responsibilities of Australian citizens and the obligations they may have as global citizens. Students recognise why choices about the allocation of resources involve trade-offs. They explain why it is important to be informed when making consumer and financial decisions. They identify the purpose of business and recognise the different ways that businesses choose to provide goods and services. They explain different views on how to respond to an issue or challenge.Students develop appropriate questions to frame an investigation. They locate and collect useful data and information from primary and secondary sources. They examine sources to determine their origin and purpose and to identify different perspectives in the past and present. They interpret data to identify, describe and compare distributions, patterns and trends, and to infer relationships, and evaluate evidence to draw conclusions. Students sequence information about events, the lives of individuals and selected phenomena in chronological order and represent time by creating timelines. They organise and represent data in a range of formats, including large- and small-scale maps, using appropriate conventions. They collaboratively generate alternative responses to an issue, use criteria to make decisions and identify the advantages and disadvantages of preferring one decision over others. They reflect on their learning to propose action in response to an issue or challenge and describe the probable effects of their proposal. They present ideas, findings, viewpoints and conclusions in a range of communication forms that incorporate source materials, mapping, graphing, communication conventions and discipline-specific terms.**Content descriptions**Locate and collect relevant information and data from primary sources and secondary sources ([ACHASSI123](http://www.scootle.edu.au/ec/search?accContentId=ACHASSI123))Organise and represent data in a range of formats including tables, graphs and large- and small-scale maps, using discipline-appropriate conventions ([ACHASSI124](http://www.scootle.edu.au/ec/search?accContentId=ACHASSI124))Interpret data and information displayed in a range of formats to identify, describe and compare distributions, patterns and trends, and to infer relationships ([ACHASSI128](http://www.scootle.edu.au/ec/search?accContentId=ACHASSI128)) |

|  |
| --- |
| **HPE** |
| By the end of Year 6, students investigate developmental changes and transitions. They explain the influence of people and places on identities. They recognise the influence of emotions on behaviours and discuss factors that influence how people interact. They describe their own and others’ contributions to health, physical activity, safety and wellbeing. They describe the key features of health-related fitness and the significance of physical activity participation to health and wellbeing. They examine how physical activity, celebrating diversity and connecting to the environment support community wellbeing and cultural understanding.Students demonstrate fair play and skills to work collaboratively. They access and interpret health information and apply decision-making and problem-solving skills to enhance their own and others’ health, safety and wellbeing. They perform specialised movement skills and sequences and propose and combine movement concepts and strategies to achieve movement outcomes and solve movement challenges. They apply the elements of movement when composing and performing movement sequences.**Content descriptions**Plan and practise strategies to promote health, safety and wellbeing ([ACPPS054](http://www.scootle.edu.au/ec/search?accContentId=ACPPS054))Investigate the role of preventive health in promoting and maintaining health, safety and wellbeing for individuals and their communities ([ACPPS058](http://www.scootle.edu.au/ec/search?accContentId=ACPPS058))Explore how participation in outdoor activities supports personal and community health and wellbeing and creates connections to natural and built environments ([ACPPS059](http://www.scootle.edu.au/ec/search?accContentId=ACPPS059))Participate in physical activities designed to enhance fitness, and discuss the impact regular participation can have on health and wellbeing ([ACPMP064](http://www.scootle.edu.au/ec/search?accContentId=ACPMP064))Apply critical and creative thinking processes in order to generate and assess solutions to movement challenges ([ACPMP068](http://www.scootle.edu.au/ec/search?accContentId=ACPMP068)) |

# 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 information 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 <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 <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 [https://education.lego.com/en-us/lessons/mindstorms-ev3/object-detection#connect](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 threads that will need to be addressed.
2. As Digital Technologies is the driving learning area, it is suggested that only the key ideas for this learning area be identified.
3. Indicate the key concepts of Digital Technologies that will be addressed and how.
4. 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 concepts/key ideas, 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 – Staying fit, healthy and sun-safe**

**Assessment focus:** Australian Curriculum: Digital Technologies
(Digital systems and information 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 6)

**Context:** xxxx

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

**Prior learning:** Students will have:

* identified and explored a range of digital systems with peripheral devices for different purposes
* become with a variety of familiar information systems and explained how they have met common personal, school or community needs
* 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

Achievement standard

By the end of Year 6, students explain the fundamentals of digital system components (hardware, software and networks) and how digital systems are connected to form networks. They explain how digital systems use whole numbers as a basis for representing a variety of data types.

Students define problems in terms of data and functional requirements and design solutions by developing algorithms to address the problems. They incorporate decision-making, repetition and user interface design into their designs and implement their digital solutions, including a visual program. They explain how information systems and their solutions meet needs and consider sustainability. Students manage the creation and communication of ideas and information in collaborative digital projects using validated data and agreed protocols.

**Content descriptions**

|  |
| --- |
| Examine the main components of common digital systems and how they may connect together to form networks to transmit data ([ACTDIK014](https://www.scootle.edu.au/ec/search?accContentId=ACTDIK014))Acquire, store and validate different types of data, and use a range of software to interpret and visualise data to create information ([ACTDIP016](https://www.scootle.edu.au/ec/search?accContentId=ACTDIP016))Explain how student solutions and existing information systems are sustainable and meet current and future local community needs ([ACTDIP021](https://www.scootle.edu.au/ec/search?accContentId=ACTDIP021))Plan, create and communicate ideas and information, including collaboratively online, applying agreed ethical, social and technical protocols ([ACTDIP022](https://www.scootle.edu.au/ec/search?accContentId=ACTDIP022)) |

## **Content strands [X any that apply]**

|  |  |
| --- | --- |
| **Digital Technologies knowledge and understanding** | **Digital Technologies processes and production skills** |
| Digital systemsRepresentation of data | X | Collecting, managing and analysing dataCreating digital solutions by:investigating and defininggenerating and designingproducing and implementingevaluatingcollaborating and managing |  |

## **Links to the key ideas [X any that apply]**

## Read more about the [key ideas in the Australian Curriculum: Technologies](https://www.australiancurriculum.edu.au/f-10-curriculum/technologies/key-ideas/).

|  |  |  |
| --- | --- | --- |
| **Creating preferred futures** | Students develop solutions to meet needs considering impacts on liveability, economic prosperity and environmental sustainability. |  |
| **Project management** | Students will develop skills to manage projects to successful completion through planning, organising and monitoring timelines, activities and the use of resources. |   |
| **Thinking in Technologies*** Systems thinking
 | Systems thinking is a holistic approach to the identification and solving of problems where the focal points are treated as components of a system, and their interactions and interrelationships are analysed individually to see how they influence the functioning of the entire system. |  |
| * Design thinking
 | Design thinking involves the use of strategies for understanding design needs and opportunities, visualising and generating creative and innovative ideas, planning, and analysing and evaluating those ideas that best meet the criteria for success. |  |
| * Computational thinking
 | Computational thinking is a problem-solving method that is applied to create solutions that can be implemented using digital technologies. It involves integrating strategies, such as organising data logically, breaking down problems into parts, interpreting patterns and models and designing and implementing algorithms. |  |

## **Links to the key concepts [X any that apply]**

The [key concepts](https://www.australiancurriculum.edu.au/f-10-curriculum/technologies/digital-technologies/structure/)that underpin the Digital Technologies curriculum establish a way of thinking
about problems, opportunities and information systems and provide a framework for knowledge
and practice. (Colour coding is based on the [Australian Computing Academy scheme](https://aca.edu.au/#what-is-the-digital-technologies-curriculum).)

|  |  |  |
| --- | --- | --- |
|  | **abstraction** | underpins all content, particularly the content descriptions relating to the concepts of data representation; and specification; algorithms; and implementation  |
|  | **data collection**  | (properties, sources and collection of data) |  |
|  | **data representation**  | (symbolism and separation) |  |
|  | **data interpretation** | (patterns and contexts)  |  |
|  | **specification** | (descriptions and techniques) |  |
|  | **algorithms** | (following and describing) |  |
|  | **implementation** | (translating and programming) |  |
|  | **digital systems**  | (hardware, software, and networks and the internet) |  |
|  | **interactions** | (people and digital systems, data and processes) |  |
|  | **impacts** | (sustainability and empowerment) |  |

**Cross-curriculum priorities [X any that apply]** [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** |
|  |  |   |

**General** **capabilities [X any that apply]** [Read more…](https://www.australiancurriculum.edu.au/f-10-curriculum/general-capabilities/information-and-communication-technology-ict-capability/)

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Literacy** | **Numeracy** | **ICT Capability** | **Critical and Creative Thinking** | **Ethical Understanding** | **Personal and Social Capability** | **Intercultural Understanding** |
|   |   |  |  |   |  |  |

## **Links to ICT Capability continuum: Level [ ]** **[X any that apply]** [Read more…](https://www.australiancurriculum.edu.au/f-10-curriculum/general-capabilities/information-and-communication-technology-ict-capability/)

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

|  |
| --- |
| **Applying social and ethical protocols and practices when using ICT** |
| identify the legal obligations regarding the ownership and use of digital products and apply some referencing conventions  |  |
| independently apply strategies for determining and protecting the security of digital information and assess the risks associated with online environments  |  |
| identify the risks to identity, privacy and emotional safety for themselves when using ICT and apply generally accepted social protocols when sharing information in online environments, taking into account different social and cultural contexts  |  |
| explain the main uses of ICT at school, home and in the local community, and recognise its potential positive and negative impacts on their lives |  |
| **Investigating with ICT** |
| use a range of ICT to identify and represent patterns in sets of information and to pose questions to guide searching for, or generating, further information  |  |
| locate, retrieve or generate information using search engines and simple search functions and classify information in meaningful ways |  |
| assess the suitability of data or information using a range of appropriate given criteria  |  |
| **Creating with ICT** |
| use ICT effectively to record ideas, represent thinking and plan solutions  |  |
| independently or collaboratively create and modify digital solutions, creative outputs or data representation/ transformation for particular audiences and purposes |  |
| **Communicating with ICT** |
| select and use appropriate ICT tools safely to share and exchange information and to safely collaborate with others  |  |
| understand that particular forms of computer mediated communications and tools are suited to synchronous or asynchronous and one-to-one or group communications  |  |
| **Managing and operating ICT** |
| select from, and safely operate, a range of devices to undertake specific tasks and use basic troubleshooting procedures to solve routine malfunctions  |  |
| identify, compare and classify basic ICT system components  |  |
| manage and maintain data on different storage mediums – locally and on networks |  |

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