**Australian Curriculum:  
Digital Technologies**

**Years 1–2**

**Sample assessment task**

**Stepping out**

**Assessment focus:** Australian Curriculum:Digital Technologies   
(Data)

**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 particular focus on *data*. It shows how aspects of the Digital Technologies curriculum related to data 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
    - core concepts (Technologies)
    - core concepts (Digital Technologies)
* general capabilities
* cross-curriculum priorities
* other learning areas. See Appendix 1 for detailed links.
* 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 data.

**Title: Stepping out**

**Assessment focus:** Australian Curriculum: Digital Technologies (Data). This task is also linked to Mathematics. Depending on modifications made to this task, opportunities may exist to link this task to other learning areas.

**Band:** Years1–2 (intended cohort Year 1)

**Context:** Measurement (Mathematics)

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

**Prior learning:** Students will have previously collected data of various kinds such as preferred ice-cream flavours, students’ height and insects in their nature reserve. To successfully complete this assessment, students should be able to reflect on previous instances of collecting data about themselves and the world around them through Mathematics and Science activities throughout the year. The teacher may need to scaffold this activity by revisiting previous learning experiences and by providing feedback to the students as the task progresses.

## **Task summary**

Discuss with the students how knowing the distance between places is important for planning journeys.They will be aware of how to accurately measure a step, for example from the back of the first foot to the back of the second foot. Students can use yarn or string to measure their step and then put the pieces of yarn to compare the length of steps with the entire class. Working through a prediction phase early in the topic, students will have opportunities to compare predicted data with actual data collected to increase understanding.

Students will:

* research their movements around the school
* collect data on their physical movement around different parts of the school
* collect data using a variety of techniques to count the steps taken, for example tally marks, cardboard feet, string, counting with numbers
* collate and sort their data and represent them to show steps taken at different points around the school
* produce a graph which shows the steps required to walk from point A in the school to point B in the school
* make decisions and answer questions about their movement
* interpret their own data
* interpret the data of other students
* compare the number of steps to the same location and explain why there are differences between students, for example longer strides, shorter path to the same location
* present the data appropriately to an audience.

**Notes for teachers:** Data sets do not need to be large for this activity. Data interpretation and representation are the key focus (through Mathematics content descriptions). See Appendix 2 and Student task sheet*.*

**Background information**

**Teacher guidance and support**

Students should be guided towards understanding that to compare measurements in a standardised way, the unit of measurement needs to be consistent. Figure 1 shows some examples of what data collection may involve. It will depend on the resources that your school has access to. Students may use the following to calculate steps:

* students’ own feet, one in front of the other
  + Ask students to walk three separate journeys, record their steps and compare with others to see that footsteps are an approximation, but can be wildly different, hence a standardised unit is preferable.
* cardboard cut-out of one foot
* materials such as blocks
* lengths of yarn or string.

Ask students from an older grade to help code a micro:bit as a step counter. See Resources section, Appendix 2.

Figure 1 shows some examples of what data representation may look like for the student, depending on the resources which your school has access to.

|  |  |  |  |
| --- | --- | --- | --- |
| C:\Users\mhughes\AppData\Local\Microsoft\Windows\INetCache\Content.MSO\9CEDE164.tmp | | C:\Users\mhughes\AppData\Local\Microsoft\Windows\INetCache\Content.MSO\5BFCB2F0.tmp | |
| ***C:\Users\mhughes\AppData\Local\Microsoft\Windows\INetCache\Content.MSO\3EB9C67E.tmp*** | ***C:\Users\mhughes\AppData\Local\Microsoft\Windows\INetCache\Content.MSO\E9A2B73C.tmp*** | | ***C:\Users\mhughes\AppData\Local\Microsoft\Windows\INetCache\Content.MSO\60032112.tmp*** |

Figure 1: Some examples of what data representation may look like for the student

*Images CC 4.0 ACARA and ACA except Lego image source:* [*images.app.goo.gl/tKyB6Yuxbd2aj9eg6*](https://images.app.goo.gl/tKyB6Yuxbd2aj9eg6) *and micro:bit image:* [*make.techwillsaveus.com/microbit/activities/step-counter-by-the-faraday-institute*](https://make.techwillsaveus.com/microbit/activities/step-counter-by-the-faraday-institute) *accessed 8/4/2019*

**Links to the Australian Curriculum (V9)**

Table 1 provides an opportunity for teachers to see all 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 (v9)

|  |  |  |  |
| --- | --- | --- | --- |
| **Digital Technologies**  ***Achievement standard***  Aspects of the achievement standard addressed by this task are highlighted. | By the end of Year 2 students show how simple digital solutions meet a need for known users. Students represent and process data in different ways. They follow and describe basic algorithms involving a sequence of steps and branching. With assistance, students access and use digital systems for a purpose. They use the basic features of common digital tools to create, locate and share content, and to collaborate, following agreed behaviours. Students recognise that digital tools may store their personal data online. | | |
| ***Strands***  *Sub-strands* | Digital Technologies knowledge and understanding   * Data representation   Digital Technologies processes and production skills   * Investigating and defining * Collaborating and managing | | |
| ***Content descriptions*** | * represent data as pictures, symbols, numbers and words AC9TDI2K02 * investigate simple problems for known users that can be solved with digital systems AC9TDI2P01 * use the basic features of common digital tools to create, locate and communicate content AC9TDI2P04 | | |
| ***Technologies core concepts*** | * data * systems * computational thinking | ***Digital Technologies core concepts*** | * digital systems * data representation * abstraction * data acquisition\* * data interpretation\* |
| ***General capabilities*** | * Digital Literacy * Literacy * Numeracy |
| ***Cross-curriculum priorities*** | N/A | ***Learning area or subject connections*** |  |

\*Through Mathematics content descriptions

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

|  |  |
| --- | --- |
| **Mathematics**  ***Year 1 Achievement standard***  Aspects addressed by this task are highlighted. | By the end of Year 1, students connect number names, numerals and quantities, and order numbers to at least 120. They demonstrate how one- and two-digit numbers can be partitioned in different ways and that two-digit numbers can be partitioned into tens and ones. Students partition collections into equal groups and skip count in twos, fives or tens to quantify collections to at least 120. They model situations involving addition, subtraction, equal sharing and grouping, using a variety of calculation strategies. Students use numbers, symbols and objects to create skip counting and repeating patterns, identifying the repeating unit.  They compare and order objects and events based on the attributes of length, mass, capacity and duration, communicating reasoning. Students measure the length of shapes and objects using uniform informal units. They make, compare and classify shapes and objects using obvious features. Students use directions to move people and objects within a space.  They collect and record categorical data, create one-to-one displays, and compare and discuss the data using frequencies. Students identify and describe outcomes of familiar chance events. |
| ***Year 2 Achievement standard***  Aspects addressed by this task are highlighted. | By the end of Year 2, students order and represent numbers to at least 1000, apply knowledge of place value to partition, rearrange and rename two- and three-digit numbers in terms of their parts, and regroup partitioned numbers to assist in calculations. They model additive situations, including money transactions, and solve practical problems involving addition and subtraction, using number sentences and choosing calculation strategies. Students model multiplicative situations and solve problems involving multiplication and division using equal groups, arrays and repeated addition. They identify and represent part-whole relationships of halves, quarters and eighths in measurement contexts. Students describe and continue patterns that increase and decrease additively by a fixed amount, and identify missing elements in the pattern.  They use uniform informal units to measure and compare shapes and objects. Students determine the number of days between events using a calendar and read time on an analog clock to the hour, half hour and quarter hour. They compare and classify shapes, describing features using formal spatial terms. Students locate and identify relative positions of features in two-dimensional representations and move position by following directions and pathways.  They use a range of methods to collect, record, represent and interpret categorical data in response to questions. Students list and order the likelihood of outcomes for everyday events. |
| ***Strands*** | * Measurement * Statistics |
| ***Year 1 Content descriptions*** | * measure the length of shapes and objects using informal units, recognising that units need to be uniform and used end-to-end AC9M1M02 * acquire and record data in various ways including using digital tools, objects, images, drawings, lists, tally marks and symbols AC9M1ST01 * represent collected categorical data using one-to-one displays and digital tools where appropriate; quantify and compare the data using frequencies and discuss the findings AC9M1ST02 |
| ***Year 2 Content descriptions*** | * measure and compare objects based on length, capacity and mass using appropriate uniform informal units and smaller units for accuracy when necessary   AC9M2M01   * acquire categorical data sets through surveys, observation, experiment and using digital tools; sort data into relevant categories and display data using lists and tables AC9M2ST01 * create different graphical representations of data using software where appropriate; compare the different representations, identify and describe common and distinctive features in response to questions AC9M2ST02 |

**Assessment**

**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** | Student: | |
| Students represent and process data in different ways. | * identifies how the same data sets can be represented in different ways. | |
| With assistance, students access and use digital systems for a purpose. They use the basic features of common digital tools to create, locate and share content, and to collaborate, following agreed behaviours. | * uses digital systems to visualise data. | |
| **Mathematics** | | |
| **Year 1**  Students measure the length of shapes and objects using uniform informal units. They collect and record categorical data, create one-to-one displays, and compare and discuss the data using frequencies.  **Year 2**  They use uniform informal units to measure and compare shapes and objects. They use a range of methods to collect, record, represent and interpret categorical data in response to questions. | | * acquires and sorts data by measuring and recording footsteps, e.g. tally charts * creates an image of data collected using hands-on manipulatives, drawings or digital applications |

**Sample assessment rubric 1–2 (Data)**

**Note:** The rubric below shows only Digital Technologies and Mathematics. There are opportunities to include other learning areas in the assessment.

‘The purpose of using rubrics is to provide students with feedback on tasks to inform their learning. The feedback can be specific, as it relates to one of a number of different aspects of a student’s work. Rather than an overall “grade” being given, the teacher provides targeted feedback against the criteria. The criteria can range across a number of skills and/or understandings relevant to the task.’ ESA (2019) <http://www.scootle.edu.au/ec/viewing/R11921/index.html>

This rubric is an example; the intention is that you can customise it to suit the unit of work you have developed and your school context. Some further tools to support you are: <http://rubistar.4teachers.org/index.php> and <http://www.teach-nology.com/web_tools/rubrics/>

|  |  |  |  |
| --- | --- | --- | --- |
| **Digital Technologies** | **Above standard**  ***Students*:** | **At standard**  ***Students*:** | **Below standard**  ***Students*:** |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Students represent and process data in different ways. | | | | |
| **Representing data** | Creatively represent data in a variety of different ways | Represents data in different ways e.g. use sticks or objects, tally marks, photographs of data | | Represent some data |
| Uses a digital system to process data in a variety of ways e.g. tables, diagrams, spreadsheets | Processes data in different ways e.g. table, picture graph | | Process some data |
| With assistance, students access and use digital systems for a purpose. They use the basic features of common digital tools to create, locate and share content, and to collaborate, following agreed behaviours. | | | | |
| **Investigating and defining;**  **Collaborating and managing** | uses digital systems independently to present data in different ways to answer simple questions | With assistance, accesses and uses digital systems to present data in different ways | | uses a digital system to present data with support |
| **Mathematics** | **Above standard**  ***Students*:** | **At standard**  ***Students*:** | | **Below standard**  ***Students*:** |
| Students measure the length of shapes and objects using uniform informal units. | | | | |
| **Measurement**  **Year 1** | accurately measure using a variety of techniques to count the steps taken, for example tally marks, cardboard feet, string, counting with numbers | accurately measure and count the steps taken to get from one point to another such as the length of a desk, for example tally marks, cardboard feet, string, counting with numbers | attempt to measure a shape with uniform informal units | |
| **Mathematics** | **Above standard**  ***Students*:** | **At standard**  ***Students*:** | | **Below standard**  ***Students*:** |
| They use uniform informal units to measure and compare shapes and objects. | | | | |
| **Measurement**  **Year 2** | accurately measure and compare using a variety of techniques to count the steps taken, for example tally marks, cardboard feet, string, counting with numbers | accurately measure, count and compare the steps taken to get from one point to another, for example tally marks, cardboard feet, string, counting with numbers | measure the distance between two points | |
| They collect and record categorical data, create one-to-one displays, and compare and discuss the data using frequencies. | | | | |
| **Statistics**  **Year 1** | gathers data with support by observing and counting | gathers data independently by observing and counting objects | gathers data independently by observing, counting and measuring objects | |
| **Statistics**  **Year 1** | records data independently as images, numbers or text | records data independently as images | records images with support | |
| They use a range of methods to collect, record, represent and interpret categorical data in response to questions. | | | | |
| **Statistics**  **Year 2** | discusses inferences within the data collected | comprehends what someone else’s graph represents | explores data by classifying, grouping and sorting | |
| **Statistics**  **Year 2** | makes complex generalisations about the data (e.g. what do these data **not** tell us?) | makes simple generalisations and predictions about the data (e.g. organises objects by colour and size) | explains what the data represent with support | |

**Appendix 1**

**Australian Curriculum links (in detail)**

**Links to the Australian Curriculum**

**Digital Technologies v9**

**Achievement standard**

By the end of Year 2 students show how simple digital solutions meet a need for known users. Students represent and process data in different ways. They follow and describe basic algorithms involving a sequence of steps and branching. With assistance, students access and use digital systems for a purpose. They use the basic features of common digital tools to create, locate and share content, and to collaborate, following agreed behaviours. Students recognise that digital tools may store their personal data online.

**Content descriptions**

|  |
| --- |
| represent data as pictures, symbols, numbers and words AC9TDI2K02  investigate simple problems for known users that can be solved with digital systems AC9TDI2P01  use the basic features of common digital tools to create, locate and communicate content AC9TDI2P04 |

**Mathematics v9**

**Year 1 Achievement standard**

By the end of Year 1, students connect number names, numerals and quantities, and order numbers to at least 120. They demonstrate how one- and two-digit numbers can be partitioned in different ways and that two-digit numbers can be partitioned into tens and ones. Students partition collections into equal groups and skip count in twos, fives or tens to quantify collections to at least 120. They model situations involving addition, subtraction, equal sharing and grouping, using a variety of calculation strategies. Students use numbers, symbols and objects to create skip counting and repeating patterns, identifying the repeating unit.

They compare and order objects and events based on the attributes of length, mass, capacity and duration, communicating reasoning. Students measure the length of shapes and objects using uniform informal units. They make, compare and classify shapes and objects using obvious features. Students use directions to move people and objects within a space.

They collect and record categorical data, create one-to-one displays, and compare and discuss the data using frequencies. Students identify and describe outcomes of familiar chance events.

**Year 1 Content descriptions**

|  |
| --- |
| measure the length of shapes and objects using informal units, recognising that units need to be uniform and used end-to-end AC9M1M02  acquire and record data in various ways including using digital tools, objects, images, drawings, lists, tally marks and symbols AC9M1ST01  represent collected categorical data using one-to-one displays and digital tools where appropriate; quantify and compare the data using frequencies and discuss the findings AC9M1ST02 |

**Year 2 Achievement standard**

By the end of Year 2, students order and represent numbers to at least 1000, apply knowledge of place value to partition, rearrange and rename two- and three-digit numbers in terms of their parts, and regroup partitioned numbers to assist in calculations. They model additive situations, including money transactions, and solve practical problems involving addition and subtraction, using number sentences and choosing calculation strategies. Students model multiplicative situations and solve problems involving multiplication and division using equal groups, arrays and repeated addition. They identify and represent part-whole relationships of halves, quarters and eighths in measurement contexts. Students describe and continue patterns that increase and decrease additively by a fixed amount, and identify missing elements in the pattern.

They use uniform informal units to measure and compare shapes and objects. Students determine the number of days between events using a calendar and read time on an analog clock to the hour, half hour and quarter hour. They compare and classify shapes, describing features using formal spatial terms. Students locate and identify relative positions of features in two-dimensional representations and move position by following directions and pathways.

They use a range of methods to collect, record, represent and interpret categorical data in response to questions. Students list and order the likelihood of outcomes for everyday events.

**Year 2 Content descriptions**

|  |
| --- |
| measure and compare objects based on length, capacity and mass using appropriate uniform informal units and smaller units for accuracy when necessary AC9M2M01  acquire categorical data sets through surveys, observation, experiment and using digital tools; sort data into relevant categories and display data using lists and tables AC9M2ST01  create different graphical representations of data using software where appropriate; compare the different representations, identify and describe common and distinctive features in response to questions AC9M2ST02 |

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

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

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

|  |  |  |
| --- | --- | --- |
| Creating preferred futures | Creating preferred futures is the overarching core concept. It involves identifying compelling visions of the future and making considered design decisions taking into account diversity; ethics; and economic, environmental and social sustainability factors. This overarching core concept is developed through the Technologies core concepts. |  |
| 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. |  |
| 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. | 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. |  |

**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 |  |
|  | **data representation** | data being represented and structured symbolically for storage, use and communication, by people and in digital systems   * *Use digital technologies to manipulate data and present a product. For example, create a representation of data using footprints to indicate footsteps counted.* | X |
|  | **data acquisition\*** | numerical, categorical or structured values acquired or calculated to create information   * *Students understand that we can use systems like tables in word processors or apps to collect and collate information* | X |
|  | **data interpretation\*** | extracting meaning from data   * *Students understand that using interpreting measurement data helps us make sense of the scale of our world.* | 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 | X |
|  | **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://v9.australiancurriculum.edu.au/)

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

## **General capabilities (v9)** [Read more…](https://v9.australiancurriculum.edu.au/)

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

**Links to Digital Literacy continuum (v9): Level 2**

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

|  |  |
| --- | --- |
| **Practising digital safety and wellbeing** | |
| Manage online safety   * use online tools that are age appropriate or only under supervision, seeking help from trusted adults when feeling unsafe |  |
| Manage digital privacy and identity   * recognise that online tools (website and apps) store their personal data which may give an impression of them |  |
| Manage digital wellbeing   * follow agreed rules for the healthy use of digital tools and apply them at school and home |  |
| **Investigating** | |
| Locate information   * locate information through search engines and in documents by applying search terms, and select relevant information |  |
| Acquire and collate data   * collect data by counting, measuring and observing with familiar digital tools | X |
| Interpret data   * classify and group data using familiar digital tools to answer simple questions | X |
| **Creating and exchanging** | |
| Plan   * use simple digital tools to contribute to a basic plan to complete a task |  |
| Create, communicate and collaborate   * experiment with the features of familiar digital tools to create content | X |
| Respect intellectual property   * recognise ownership of products that others produce or that are produced collaboratively |  |
| **Managing and operating** | |
| Manage content   * save and retrieve content with an agreed name | X |
| Protect content   * save and access content in their individual school account |  |
| Select and operate tools   * use familiar digital tools to complete tasks and consolidate learning, attempt to solve a problem before seeking help | X |

## **Appendix 2**

## **Support materials**

## Things to think about

*Rich questions and discussion starters*

Students with diverse needs

**Resources**

## **Support materials**

## **Things to think about**

## **Rich questions and discussion starters**

* What is the shortest route to get to xyz?
* What is the longest route to get to xyz?

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

Students could begin to make some inferences with guided questioning, for example:

* Why would we want to record this or know this information? What could it help us with?
* What questions cannot be answered with these data? For example: Which route has a bubbler on the way? Which route goes past the canteen?

For older students more complex questions such as these are useful:

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

## See <https://www.lavc.edu/profdev/library/docs/promotethink.aspx>

## **Suggestions for preparing a task for Year 1 or Year 2**

The aim of this task is to explore the concept of data as it applies to a context that is meaningful to and contextually appropriate for the students in your class. The context and topic through which your students can engage with data will obviously vary with their age and ability.

***Year 1 students*** could explore data through links to HPE physical movement lesson. Students could investigate different ways of moving their body, and manipulating objects and space, counting steps as they go and draw conclusions about their effectiveness.

***Year 2 students*** could explore data through a HASS unit of work by collecting, sorting and recording information and data from observations and from provided sources, including unscaled timelines and labelled maps or models. Students could map their travels in familiar locations around their school and local community; for example, places they visit on the weekends such as the sporting field or shopping centre.

## **Students with diverse needs**

|  |  |
| --- | --- |
| Students with **learning disabilities** may need simplified, scaffolded support materials. Adjustments might include:   * Is there a difference if I take a stride, compared with placing one foot directly in front of the other? * Can the student record steps from point A to B and return to A? * Can the student record the steps from point A to B then to C?   Students with **limited mobility** may wish to use paper cut-outs of feet, tie a ribbon to their chair wheel and see how many wheel rotations it takes to travel a set plan. | C:\Users\mhughes\AppData\Local\Microsoft\Windows\INetCache\Content.MSO\9E6BACA0.tmp |
| Students with **high potential** may require opportunities for extension. Adjustments might include:   * measuring their step/stride and then calculating the walking distance for the A to B trip based on the measurement * creating a birds-eye view labelled map that includes A, B, path and measured distance, e.g. created with the free app Skitch. * using scribble maps to display data. See [www.scribblemaps.com/](https://www.scribblemaps.com/) * using Skitch app to display data. See [apps.apple.com/au/app/skitch-snap-mark-up-send/id490505997](https://apps.apple.com/au/app/skitch-snap-mark-up-send/id490505997). | C:\Users\mhughes\AppData\Local\Microsoft\Windows\INetCache\Content.MSO\6A37DBAE.tmp |

## **Resources**

* Australian Curriculum Technologies/Digital Technologies [www.australiancurriculum.edu.au/resources/digital-technologies-in-focus/](https://www.australiancurriculum.edu.au/resources/digital-technologies-in-focus/)
* Digital Technologies Hub [www.digitaltechnologieshub.edu.au/](https://www.digitaltechnologieshub.edu.au/)
* ACA Unpack the Curriculum [aca.edu.au/curriculum/](https://aca.edu.au/curriculum/)
* Code a micro:bit as a step counter [make.techwillsaveus.com/microbit/activities/step-counter-by-the-faraday-institute](https://make.techwillsaveus.com/microbit/activities/step-counter-by-the-faraday-institute)
* [Scootle Assessment Rubric: Learning strategy resource](http://www.scootle.edu.au/ec/viewing/R11921/index.html)
* Use scribble maps to display data [www.scribblemaps.com/](https://www.scribblemaps.com/)
* Use Skitch app to display data [apps.apple.com/au/app/skitch-snap-mark-up-send/id490505997](https://apps.apple.com/au/app/skitch-snap-mark-up-send/id490505997)Create simple charts and graphs [www.j2e.com/j2data/](https://www.j2e.com/j2data/)

## **Appendix 3**

## **Data 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. 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: xxxx**

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

**Band:** 1–2 (intended cohort Year X)

**Context:** xxxx

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

**Prior learning:** Students will have previously collected data of various kinds such as preferred ice-cream flavours, students’ height and insects in their nature reserve. To successfully complete this assessment, students should be able to reflect on previous instances of collecting data about themselves and the world around them through xxxx activities throughout the year. The teacher may need to scaffold this activity by revisiting previous learning experiences and by providing feedback to the students as the task progresses.

## **Task summary**

Discuss with the students xxxx.They will be aware of how to xxxx. Students can use xxxx. Working through a prediction phase early in the topic, students will have opportunities to compare predicted data with actual data collected to increase understanding.

Students will:

* research xxxx
* collect data on xxxx
* collect data using a variety of techniques to count xxxx, for example tally marks, string, counting with numbers
* collate and sort their data and represent it to show xxxx
* produce a graph which shows xxxx
* make decisions and answer questions about xxxx
* interpret their own data
* interpret the data of other students
* compare xxxx, for example xxxx
* present the data appropriately to an audience.

**Notes for teachers:** Data sets do not need to be large for this activity. Data interpretation and representation are the key focus. See Appendix 2 and Student task sheet: Stepping out*.*

**Digital Technologies v9**

**Achievement standard**

By the end of Year 2 students show how simple digital solutions meet a need for known users. Students represent and process data in different ways. They follow and describe basic algorithms involving a sequence of steps and branching. With assistance, students access and use digital systems for a purpose. They use the basic features of common digital tools to create, locate and share content, and to collaborate, following agreed behaviours. Students recognise that digital tools may store their personal data online.

**Content descriptions**

|  |
| --- |
| identify and explore digital systems and their components for a purpose AC9TDI2K01  represent data as pictures, symbols, numbers and words AC9TDI2K02  investigate simple problems for known users that can be solved with digital systems AC9TDI2P01  discuss how existing digital systems satisfy identified needs for known users AC9TDI2P03  use the basic features of common digital tools to create, locate and communicate content AC9TDI2P04  use the basic features of common digital tools to share content and collaborate demonstrating agreed behaviours, guided by trusted adults AC9TDI2P05  access their school account with a recorded username and password AC9TDI2P06  discuss that some websites and apps store their personal data online AC9TDI2P07 |

**Mathematics v9**

**Year 1 Achievement standard**

By the end of Year 1, students connect number names, numerals and quantities, and order numbers to at least 120. They demonstrate how one- and two-digit numbers can be partitioned in different ways and that two-digit numbers can be partitioned into tens and ones. Students partition collections into equal groups and skip count in twos, fives or tens to quantify collections to at least 120. They model situations involving addition, subtraction, equal sharing and grouping, using a variety of calculation strategies. Students use numbers, symbols and objects to create skip counting and repeating patterns, identifying the repeating unit.

They compare and order objects and events based on the attributes of length, mass, capacity and duration, communicating reasoning. Students measure the length of shapes and objects using uniform informal units. They make, compare and classify shapes and objects using obvious features. Students use directions to move people and objects within a space.

They collect and record categorical data, create one-to-one displays, and compare and discuss the data using frequencies. Students identify and describe outcomes of familiar chance events.

**Year 1 Content descriptions**

|  |
| --- |
| acquire and record data in various ways including using digital tools, objects, images, drawings, lists, tally marks and symbols AC9M1ST01  represent collected categorical data using one-to-one displays and digital tools where appropriate; quantify and compare the data using frequencies and discuss the findings AC9M1ST02 |

**Year 2 Achievement standard**

By the end of Year 2, students order and represent numbers to at least 1000, apply knowledge of place value to partition, rearrange and rename two- and three-digit numbers in terms of their parts, and regroup partitioned numbers to assist in calculations. They model additive situations, including money transactions, and solve practical problems involving addition and subtraction, using number sentences and choosing calculation strategies. Students model multiplicative situations and solve problems involving multiplication and division using equal groups, arrays and repeated addition. They identify and represent part-whole relationships of halves, quarters and eighths in measurement contexts. Students describe and continue patterns that increase and decrease additively by a fixed amount, and identify missing elements in the pattern.

They use uniform informal units to measure and compare shapes and objects. Students determine the number of days between events using a calendar and read time on an analog clock to the hour, half hour and quarter hour. They compare and classify shapes, describing features using formal spatial terms. Students locate and identify relative positions of features in two-dimensional representations and move position by following directions and pathways.

They use a range of methods to collect, record, represent and interpret categorical data in response to questions. Students list and order the likelihood of outcomes for everyday events.

**Year 2 Content descriptions**

|  |
| --- |
| locate positions and identify relative positions of key features of a familiar space represented in two-dimensions; move positions by following directions and pathways AC9M2SP02  acquire categorical data sets through surveys, observation, experiment and using digital tools; sort data into relevant categories and display data using lists and tables AC9M2ST01  create different graphical representations of data using software where appropriate; compare the different representations, identify and describe common and distinctive features in response to questions AC9M2ST02 |

## **Content strands and sub-strands (v9)** [X all that apply]

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

## **Links to Technologies core concepts (v9)** [X all 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 insert ideas about how they could be addressed]

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** [X any that apply] [Read more…](https://v9.australiancurriculum.edu.au/)

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

## **General capabilities (v9)** [X any that apply] [Read more…](https://v9.australiancurriculum.edu.au/)

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

**Links to Digital Literacy continuum (v9): Level [insert]** [X any that apply]

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

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