DTiF
Digital Technologies in focus
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acara AUSTRALIAN CURRICULUM, ASSESSMENT AND REPORTING AUTHORITY

CLASSROOM IDEAS: YEARS 1–2

Data collection and representation: what's in your lunchbox?

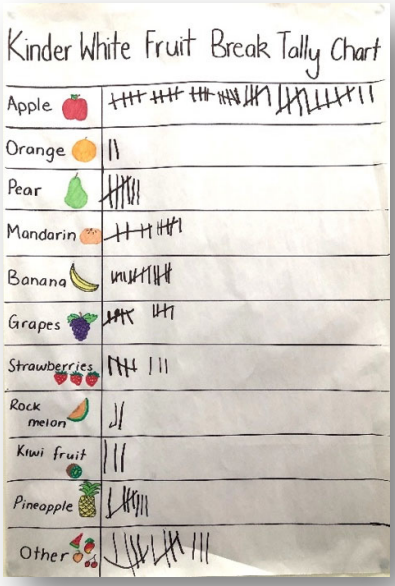

Figure 1: A fruit tally chart created by a teacher and students at Holy Family Parish School, ACT

Figure 2: Fruit with plastic stickers

Many schools are actively encouraging students to eat fresh fruits and vegetables.
The contents of lunchboxes or the types of fruit or vegetables eaten at crunch and sip/fruit break can provide a good source of data for students to represent. Data can be visualised using digital tools, or as an unplugged activity using tally marks (Figure 1), and then displayed in the classroom.

In Digital Technologies 1–2, students could:

- record data on waste/plastic-free foods
- use the plastic stickers that are attached to fruits (Figure 2) to create a pictograph
- explore how the same data can be represented in different ways
    - Since data can be represented as pictures, symbols, numbers and words, how many ways can your data be represented?
- represent data using simple software
- How could you represent these data to share with an audience? What software could be used to visualise these data? How could you highlight different findings such as by number of items, type or weight?

In Mathematics Year 1, students could:

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

In Mathematics Year 2, students could:

- acquire categorical data sets through surveys, and using digital tools; sort data into relevant categories and display data using lists and tables
- create different graphical representations of data using software; compare the different representations, identify and describe common and distinctive features in response to questions

Links to the Australian Curriculum

Table 1: Aspects of the Australian Curriculum: Digital Technologies and Mathematics version 9 Years 1 and 2 which may be addressed depending upon the task.

<table>
<tr><td>Digital Technologies

Achievement standard</td><td colspan="3">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.</td></tr>
<tr><td>Strand
Sub-strand</td><td colspan="3">Digital Technologies Knowledge and understanding
• Digital systems
• Data representation</td></tr>
<tr><td>Content descriptions</td><td colspan="3">• identify and explore digital systems and their components for a purpose AC9TDI2K01
• represent data as pictures, symbols, numbers and words AC9TDI2K02</td></tr>
<tr><td rowspan="2">Technologies Core concepts</td><td rowspan="2">• Data
• Computational thinking</td><td>Digital Technologies Core concepts</td><td>• Abstraction
• Data representation</td></tr>
<tr><td>General capabilities</td><td>• Digital Literacy
• Literacy
• Numeracy</td></tr>
<tr><td>Cross-curriculum priorities</td><td>• Sustainability†

† if waste-free options are explored</td><td>Learning area or subject connections</td><td>• Mathematics
• HPE</td></tr>
<tr><td>Year 1 Mathematics
Achievement standard</td><td colspan="3">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 solve problems involving addition and subtraction of numbers to 20 and use mathematical modelling to solve practical problems involving addition, subtraction, equal sharing and grouping, using 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 give and follow 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.</td></tr>
<tr><td>Strand</td><td colspan="3">• Statistics</td></tr>
<tr><td>Year 1 Content descriptions</td><td colspan="3">• acquire and record data for categorical variables in various ways including using digital tools, objects, images, drawings, lists, tally marks and symbols AC9M1ST01
• represent collected data for a categorical variable using one-to-one displays</td></tr>
</table>

	and digital tools where appropriate; compare the data using frequencies and discuss the findings AC9M1ST02
Year 2 Mathematics ***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 use mathematical modelling to solve practical additive and multiplicative problems, including money transactions, representing the situation and choosing calculation strategies. Students identify and represent part-whole relationships of halves, quarters and eighths in measurement contexts. They describe and continue patterns that increase and decrease additively by a constant amount and identify missing elements in the pattern. Students recall and demonstrate proficiency with addition and subtraction facts within 20 and multiplication facts for twos. 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 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.
Strand	• Statistics
Year 2 Content descriptions	• acquire data for categorical variables 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

Safety considerations: In implementing projects with a focus on food, care must be taken with regard to food safety and specific food allergies that may result in anaphylactic reactions. Some states and territories have their own specific guidelines that should be followed. For further information see: https://v9.australiancurriculum.edu.au/curriculum-information/understand-this-learning-area/technologies

In what ways could a food-related data representation activity link to other subjects?

How could data representation be integrated in Health and Physical Education or Design and Technologies?

Figure 3: Pizza school lunch – Laptop lunches for kindergarten bento box by Melissa CC BY 2.0 Source: https://www.flickr.com/photos/buzzymelibee/8719314950

Figure 4: A sandwich in a plastic bag

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