



CLASSROOM IDEAS: YEARS 1–2

Exploring patterns and data with bread tags and plastic lids

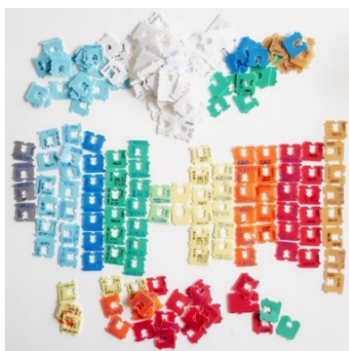


Figure 1: Bread tags sorted by colour and type Image by @the_breadtag_project



Figure 2: An artwork made by arranging discarded plastic lids Image by @life_islikeacamera



Figure 3: Patterns made with bread tags by @the_breadtag_project

Inspiration: Bread tags (also called bread clips or bread ties) and plastic drink bottle lids are very common in our homes and schools today. Unfortunately, these items are not easy to recycle because of their size and the kind of plastic they are made from. They are a commonly discarded plastic and can be found in all sorts of places in the environment such as parks.

Using them (as shown in Figures 1-4) as the focus of or manipulative in an activity provides an opportunity to talk to students about sustainability. This might include ways to re-use and re-purpose bread tags and lids, such as in Visual Arts or Technologies projects or by collecting and sending them to people or organisations who can use them productively. There are also possibilities for students to produce persuasive texts about issues related to recycling and re-design.

In Digital Technologies, manipulatives such as these bread tags and lids can be used to learn more about data (information we collect and use). For example, in 1–2, students could use bread tags or plastic lids to:

- explore patterns in data
 - What patterns can you make with the different colours, shapes or sizes?
 - How could you arrange them to show other people how many there are? Which ones are the most popular shapes or colours? And so on.
 - Use digital systems to present the data creatively (symbols, charts, graphs or other visualisations)
 - Take photos of the different types and display them using a projector, on an interactive whiteboard, in a digital presentation on a computer in a digital document or other way.
- collect, explore and sort data
 - How many bread tags (or lids) has your class collected? Are they all the same?
 - Are they different? What makes them different?
 - What ways could you sort them to make them easy to count?

Links to the Australian Curriculum

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

<p>Digital Technologies</p> <p><i>Achievement standard</i></p>	<p>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.</p>
<p><i>Strand</i></p> <p><i>Sub-strand</i></p>	<p>Digital Technologies Knowledge and understanding</p> <ul style="list-style-type: none"> Digital systems Data representation
<p><i>Content descriptions</i></p>	<ul style="list-style-type: none"> identify and explore digital systems and their components for a purpose AC9TDI2K01 represent data as pictures, symbols, numbers and words AC9TDI2K02
<p>Mathematics</p> <p><i>Year 1</i></p> <p><i>Achievement standard</i></p>	<p>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.</p> <p>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.</p> <p>They collect and record categorical data, create one-to-one displays, and compare and discuss the data using frequencies.</p>
<p><i>Strand</i></p>	<ul style="list-style-type: none"> Statistics
<p><i>Year 1</i></p> <p><i>Content descriptions</i></p>	<ul style="list-style-type: none"> 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 and digital tools where appropriate; compare the data using frequencies and discuss the findings AC9M1ST02
<p>Mathematics</p> <p><i>Year 2</i></p> <p><i>Achievement standard</i></p>	<p>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</p>

	<p>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.</p> <p>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.</p> <p>They use a range of methods to collect, record, represent and interpret categorical data in response to questions.</p>		
Strand	<ul style="list-style-type: none"> • Statistics 		
Year 2 Content descriptions	<ul style="list-style-type: none"> • 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 		
Technologies Core concepts	<ul style="list-style-type: none"> • Data • Computational thinking 	Digital Technologies Core concepts	<ul style="list-style-type: none"> • Abstraction • Data representation
		General capabilities	<ul style="list-style-type: none"> • Digital Literacy • Literacy • Numeracy
Cross-curriculum priorities	<ul style="list-style-type: none"> • Sustainability 	Learning area or subject connections	<ul style="list-style-type: none"> • The Arts – Visual Arts

Table 2: Aspects of the Australian Curriculum: Digital Technologies version 8.4 F-2 which may be addressed depending upon the task.

Digital Technologies Achievement standard	<p>By the end of Year 2, students identify how common digital systems (hardware and software) are used to meet specific purposes. They use digital systems to represent simple patterns in data in different ways.</p> <p>Students design solutions to simple problems using a sequence of steps and decisions. They collect familiar data and display them to convey meaning. They create and organise ideas and information using information systems, and share information in safe online environments.</p>
Strands	<p>Digital Technologies knowledge and understanding</p> <ul style="list-style-type: none"> • Representation of data <p>Digital Technologies processes and production skills</p> <ul style="list-style-type: none"> • Collecting, managing and analysing data

Content descriptions	<ul style="list-style-type: none"> Recognise and explore patterns in data and represent data as pictures, symbols and diagrams (ACTDIK002) Collect, explore and sort data, and use digital systems to present the data creatively (ACTDIP003) 		
Key concepts	<ul style="list-style-type: none"> Data collection Data representation Data interpretation 	Key ideas	Thinking in Technologies <ul style="list-style-type: none"> Computational thinking
Cross-curriculum priorities	<ul style="list-style-type: none"> Sustainability 	General capabilities	<ul style="list-style-type: none"> Information and Communication Technology (ICT) Capability Literacy Numeracy

Suggested inquiry questions for students in 1–2:

1. What are bread tags made of? Why are they different colours?
2. Why are these items difficult to recycle?
3. Who invented the bread tag? Why?
4. What materials could we use to design a better bread tag?
5. How much do 10 bread tags weigh? What does 1 kilogram of bread tags look like?

In what ways could a bread tag or bottle lid activity link to other learning areas?

Is there an opportunity to set your students a design challenge with bread tags or plastic lids? If so, consider design solutions that will allow the materials to be recycled later. For example, threading, stacking or joining in non-permanent ways. If lids or bread tags are glued together they may still end up as landfill at the end of a project. The artwork in Figure 4 uses layered bread tags to create an image for photographing.



Figure 4: Bread tag artwork

For ideas on repurposing bread tags see 'the bread tag project' @the_breadtag_project. For ideas on repurposing plastic bottle lids see <https://envision.org.au/envision-hands/>.

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