

Sequence of Lessons / Unit	Approx. time req'd	Year A or B	Strand		Knowledge and understanding						Strand: Processes and production skills					
			Digital systems		Representation of data		Collecting, managing and analysing data		Creating digital solutions by:							
			CD	Achievement standard #	CD	Achievement standard #	CD	Achievement standard #	Investigating and defining		Evaluating		Collaborating and managing			
Content Description	Recognise and explore digital systems (hardware and software components) for a purpose (ACTDIK001)	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)	Follow, describe and represent a sequence of steps and decisions (algorithms) needed to solve simple problems (ACTDIP004)	Explore how people safely use common information systems to meet information, communication and recreation needs (ACTDIP005)	Create and organise ideas and information using information systems independently and with others, and share these with known people in safe online environments (ACTDIP006)	CD	Achievement standard #	CD	Achievement standard #	CD	Achievement standard #	CD	Achievement standard #		
Exploring data	5	2	<input type="checkbox"/>		<input checked="" type="checkbox"/>	2	<input checked="" type="checkbox"/>	4	<input type="checkbox"/>		<input type="checkbox"/>		<input type="checkbox"/>			

Years F-2 Achievement Standard	Years 3 and 4 Achievement Standard
<p>By the end of Year 2</p> <ul style="list-style-type: none"> Students identify how common digital systems (hardware and software) are used to meet specific purposes. (1) They use digital systems to represent simple patterns in data in different ways. (2) Students design solutions to simple problems using a sequence of steps and decisions. (3) They collect familiar data and display them to convey meaning. (4) They create and organise ideas and information using information systems, and share information in safe online environments. (5) 	<p>By the end of Year 4</p> <ul style="list-style-type: none"> Students describe how a range of digital systems (hardware and software) and their peripheral devices can be used for different purposes. (1) They explain how the same data sets can be represented in different ways. (2) Students define simple problems, design and implement digital solutions using algorithms that involve decision-making and user input. (3) They explain how the solutions meet their purposes. (4) They collect and manipulate different data when creating information and digital solutions. (5) They safely use and manage information systems for identified needs using agreed protocols and describe how information systems are used. (6)

Data is all around us
 Represent data as symbols, numbers and pictures.
 Collect, sort and present data in a digital format.

Exploring data
 Represent data in different ways. Collect, sort and present data in digital formats.

Exploring data

This aspect of digital technologies has strong connections to the Mathematics learning area and can be integrated to make learning more meaningful. Connections to other relevant learning areas are also indicated where applicable.

At this level we include numeric data which includes data counted in whole numbers, such as numbers of people, and data that is continuous, such as height or weight. Another form of data is categorical data. This data is often a word or a symbol that can be ranked or ordered, such as a temperature scale from cold to hot, and those data that cannot be ranked or ordered, such as eye colour, gender or types of pets. Our focus in Digital Technologies is how to work with the data in digital form.

It's worth pointing out that in Digital Technologies, **representing** data refers to the way data is symbolised, visually treated or provided in audio. For example, at this level data about animals may be represented as images of each animal, emotions may be represented as emojis, and weather data may be represented as icons for wind, rain or describing the amount of sunshine. **Presentation** of data deals with the format it may be presented in, such as in a table, T-chart or Y-chart, a picture graph or a bar graph.

We may collect data through observations, by survey or from other sources. Data often comes to us unorganised, so the first step is to sort the data by common characteristics or attributes; then arrange the data to help make sense and look for patterns; and finally present the data visually.

Flow of activities				
	Numerical data Record, sort and present numerical data.	Categorical data Record, sort and present categorical data.	Representing data Explore ways to use pictures or symbols to represent data	Presenting data Collect data and explore ways to present data.
Questions to guide exploration	<i>How can I sort data that is made up of numbers?</i>	<i>How can I sort data that is made up of words or symbols?</i>	<i>What are some ways I can represent data?</i>	<i>What are some ways I can present data?</i>
AC Alignment	<i>Representation of data (ACTDIK002) Collecting, managing and analysing data (ACTDIP003)</i>	<i>Collecting, managing and analysing data (ACTDIP003) Representation of data (ACTDIK002)</i>	<i>Representation of data (ACTDIK002)</i>	<i>Representation of data (ACTDIK002) Collecting, managing and analysing data (ACTDIP003)</i>
What's this about?	Numeric data includes data counted in whole numbers such as numbers of people and data that is continuous such as height or weight.	Categorical data is often a word or a symbol that can be ranked or ordered, such as a temperature scale from cold to hot, and those data that cannot be ranked or ordered, such as eye colour, gender or types of pets.	Glyphs are a fun and colourful way for students to collect, explore and sort data about themselves and their classmates using a range of themes. A glyph is a pictorial representation of data, and can be created using drawings, collage or digital artworks. Rebus stories use pictures or symbols to represent words or parts of words. Musical notes can be represented in different ways. The rhythm and beat can be represented visually using colours and shapes. Colours can be used to represent particular notes. The block shape can represent the time signature and length of note.	Data can be graphed visually and presented as a chart, for example, a column graph. When counting up physical items these can be sorted and organised into columns and presented as a column graph.
The focus of the learning (in simple terms)	Record, sort and present numerical data. Select age appropriate texts to read to the class. The texts need to feature animals within the plot. Provide each student with a worksheet and ask them to represent the different types and number of animals featured in the story using, for example, pictures, numbers, tally marks. Ask students to sort and arrange the list from least to most. Compare representations of data.	Record, sort and present categorical data. A relevant example may be to organise a process to record weather data over a month. Create a table to record observations. At a set time each day record the observations, which may include an icon for cloud, sun, wind and rain. Describe each day using a scale from cold, cool, warm to hot. Use the data to create a graph digitally and look for patterns in the data. What conditions are common to days that feel cold?	Introduce how to represent data using a glyph. A student completes a survey that asks questions either about the child or about the topic being covered. For example, the glyph can be a line drawing of a ladybug. The survey might be about their favourite things. After the student completes the survey, the student uses a legend that guides the way they visually display their results. <ul style="list-style-type: none"> Your favourite food is represented as body colour (red = sandwich, blue = sushi, green = pasta, purple = rice) Your favourite pet is represented by the spots (dog = brown, cat = black, rabbit = yellow) The glyphs displayed together can be used to show the range of responses and look for patterns in the data. Integrate English (reading) through rebus stories. Create and share rebus stories. Sounds could also be incorporated as students explore different ways to represent data. Integrate The Arts: Music by representing musical notes in different ways. An interesting approach is to represent notes and beat using Lego blocks or similar. Colours can be used to represent particular notes. The block size can represent the time signature and length of note. For example,	Packets of coloured lollies or other confectionary provide an opportunity to compare the amount of each type in a particular packet. For example, students could answer the question: 'What colour smarties is there most of in a packet?' On a grid, students can create a column graph using the actual lollies. You can also show students how to arrange the lollies to make the circumference of a circle making a simple pie graph, showing the segments. If using the same product students can compare data to see patterns and differences. Students can create the graph digitally. Collect data about a relevant topic to help answer a question of interest. for example, country of birth, month of birth, favourite food, favourite pet. Present the data as a glyph or as a column graph. The data can also be simply arranged in a circle and shaded sections can show the data as a segment of the circle. Discuss the usefulness of each approach. As part of a health foods focus, explore a range of meals and present data related to the ingredients of each. Discuss the types of headings that would be needed. Consider recording the data in a table

			use four square blocks to represent 4/4 timing. Two rectangle blocks can represent 2/4 timing.	and then selecting the most appropriate way to present the data digitally.
Supporting resources and tools and purpose/ context for use.	<p>'Mr Brown can Moo! Can You?' This is a video for a read-along version.</p> <p>'And to Think That I Saw It On Mulberry Street' This is a video for a read-along version.</p>	<p>'Tally Marks' An animated video that show students how to tally and explains a survey.</p>	<p>'Rhythm Clock Game for Classroom Elementary or Primary Music Lessons' Use this video as a fun game to learn how to represent notes and read them to clap a rhythm.</p> <p>Sweet Tea Classroom: How to use Glyphs in the classroom Use this blog to find out about a way of representing data using glyphs.</p>	<p>Data Detective These lesson ideas provide example teaching activities to assist students in exploring data, progressing from paper-based to digital solutions.</p>
Assessment	<p>Approach with a one-line prompt</p> <p>Suggested approaches may include: a table of data showing different representations for data.</p> <p>Achievement standard Collect familiar data and display them to convey meaning. Use digital systems to represent simple patterns in data in different ways.</p>	<p>Approach with a one-line prompt</p> <p>Suggested approaches may include: a table of data showing different representations for data.</p> <p>Achievement standard Collect familiar data and display them to convey meaning. Use digital systems to represent simple patterns in data in different ways.</p>	<p>Approach with a one-line prompt</p> <p>Suggested approaches may include: relevant representations of data.</p> <p>Achievement standard Collect familiar data and display them to convey meaning. Use digital systems to represent simple patterns in data in different ways.</p>	<p>Approach with a one-line prompt</p> <p>Suggested approaches may include: charts and discussion about their usefulness.</p> <p>Achievement standard Collect familiar data and display them to convey meaning. Use digital systems to represent simple patterns in data in different ways.</p>