

# Science

**Year 3**  
Below satisfactory

## WORK SAMPLE PORTFOLIO

Annotated work sample portfolios are provided to support implementation of the Foundation – Year 10 Australian Curriculum.

Each portfolio is an example of evidence of student learning in relation to the achievement standard. Three portfolios are available for each achievement standard, illustrating satisfactory, above satisfactory and below satisfactory student achievement. The set of portfolios assists teachers to make on-balance judgements about the quality of their students' achievement.

Each portfolio comprises a collection of students' work drawn from a range of assessment tasks. There is no pre-determined number of student work samples in a portfolio, nor are they sequenced in any particular order. Each work sample in the portfolio may vary in terms of how much student time was involved in undertaking the task or the degree of support provided by the teacher. The portfolios comprise authentic samples of student work and may contain errors such as spelling mistakes and other inaccuracies. Opinions expressed in student work are those of the student.

The portfolios have been selected, annotated and reviewed by classroom teachers and other curriculum experts. The portfolios will be reviewed over time.

*ACARA acknowledges the contribution of Australian teachers in the development of these work sample portfolios.*

## THIS PORTFOLIO: YEAR 3 SCIENCE

This portfolio provides the following student work samples:

- Sample 1 Investigation: Moving shadows
- Sample 2 Investigation: Disappearing ice cubes
- Sample 3 Poster: Day and night
- Sample 4 Investigation: Spoons and heat
- Sample 5 Venn diagram: Features of living things
- Sample 6 Investigation: Local birds.

In this portfolio, the student describes everyday phenomena involving heat and uses understanding of the effects of heat and the movement of heat to explain aspects of these phenomena (WS4). The student demonstrates an understanding of the movement of Earth relative to the sun and uses this to explain some observations (WS1, WS3), identifies a number of features common to living things (WS5) and identifies instances of the use of science knowledge in people's lives (WS3, WS4).

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The student poses questions and makes predictions based on everyday experiences (WS2, WS4, WS6) and follows procedures to collect and present observations (WS1, WS2, WS4, WS6), including using formal measurements (WS6). The student uses provided tables to present data (WS4, WS6). The student interprets data to answer teacher-generated questions, including identifying patterns, and suggests possible reasons for their findings (WS4). The student reports on how safety was considered (WS4) and considers aspects of fair testing, including describing, with teacher guidance, variables to be kept the same (WS4). The student selects appropriate scientific language and constructs representations such as drawings and graphs to communicate findings and ideas (WS1, WS2, WS3, WS4, WS5, WS6).

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## Investigation: Moving shadows

### Year 3 Science achievement standard

The parts of the achievement standard targeted in the assessment task are highlighted.

*By the end of Year 3, students use their understanding of the movement of the Earth, materials and the behaviour of heat to suggest explanations for everyday observations. They describe features common to living things. They describe how they can use science investigations to respond to questions and identify where people use science knowledge in their lives.*

*Students use their experiences to pose questions and predict the outcomes of investigations. They make formal measurements and follow procedures to collect and present observations in a way that helps to answer the investigation questions. Students suggest possible reasons for their findings. They describe how safety and fairness were considered in their investigations. They use diagrams and other representations to communicate their ideas.*

### Summary of task

Students had explored a variety of resources and representations (physical, interactive, digital) to explore the relative size of Earth, the sun and the moon; the rotation and tilt of Earth; the orbit of Earth around the sun and how shadows are formed and change.

Students worked collaboratively with others to observe, record and explain how the position of the sun and shadows changed throughout the day.

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## Investigation: Moving shadows

### Annotations

#### How do shadows change across the day?

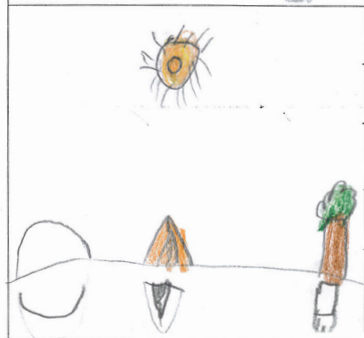
Illustrate and describe the position of the sun and how the shadows change across the day.



in the Early morning  
the tent shadow and  
the tree shadow bigger  
than the rest  
of the day.



Mid morning is when  
the shadow is quarter  
under the object



Midday is when  
shadow is smallest  
because the sun is right  
on top of the object

Records observations of the sun, and a tent and a tree and their shadows.

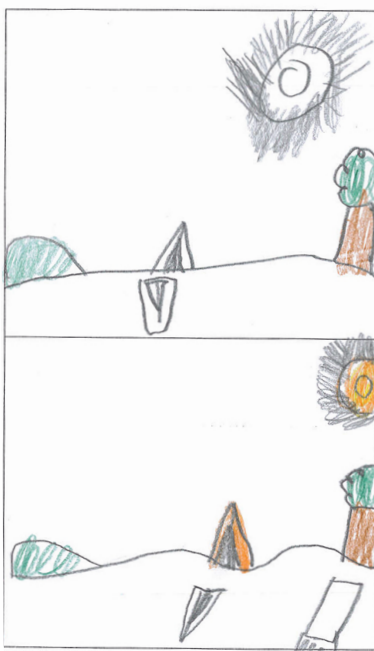
Explains why shadows are at their smallest at midday due to the sun being directly overhead.

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## Investigation: Moving shadows



mid afternoon back  
mid morning size but  
a bit smaller.

In the evening the shadow  
is facing back  
wards

Explain the results.  
the Earth rotates around  
the sun = Days

### Annotations

States that Earth rotates around the sun.

### Annotations (Overview)

The student uses drawing and written text to communicate observations and ideas.

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## Investigation: Disappearing ice cubes

### Year 3 Science achievement standard

The parts of the achievement standard targeted in the assessment task are highlighted.

*By the end of Year 3, students use their understanding of the movement of the Earth, materials and the behaviour of heat to suggest explanations for everyday observations. They describe features common to living things. They describe how they can use science investigations to respond to questions and identify where people use science knowledge in their lives.*

*Students use their experiences to pose questions and predict the outcomes of investigations. They make formal measurements and follow procedures to collect and present observations in a way that helps to answer the investigation questions. Students suggest possible reasons for their findings. They describe how safety and fairness were considered in their investigations. They use diagrams and other representations to communicate their ideas.*

### Summary of task

Students had been exploring the ways in which substances change, including the effects of heating and cooling substances.

Students were provided with a scenario in which two children are conducting an investigation into melting ice. The students were asked to decide what the investigable question would have been, and to predict what would happen when the children put the ice cube on a saucer and left it near a heater. The students were told that when the children returned to the saucer two hours later, it was empty.

The students were asked to develop a storyboard to explain what had happened to the ice cube. They completed the task over a one-hour lesson.

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## Investigation: Disappearing ice cubes

### Annotations

*Develops an investigable question based on everyday experiences.*

*Makes a plausible prediction based on knowledge of heat and melting.*

*Uses a diagram to show how heat moves to the ice cube.*

*Identifies that the ice cube melts and connects this to temperature.*

*Identifies that the ice cube has 'disappeared' as a result of adding heat.*

### Annotations (Overview)

*The student uses diagrams and written text to communicate observations and ideas.*

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## Poster: Day and night

## Year 3 Science achievement standard

The parts of the achievement standard targeted in the assessment task are highlighted.

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*Students use their experiences to pose questions and predict the outcomes of investigations. They make formal measurements and follow procedures to collect and present observations in a way that helps to answer the investigation questions. Students suggest possible reasons for their findings. They describe how safety and fairness were considered in their investigations. They use diagrams and other representations to communicate their ideas.*

## Summary of task

Students had explored different representations of the movement of Earth in relation to the sun, including interactive animations and role plays. They had discussed how day and night occur on Earth and explored the effects of being in different locations on Earth.

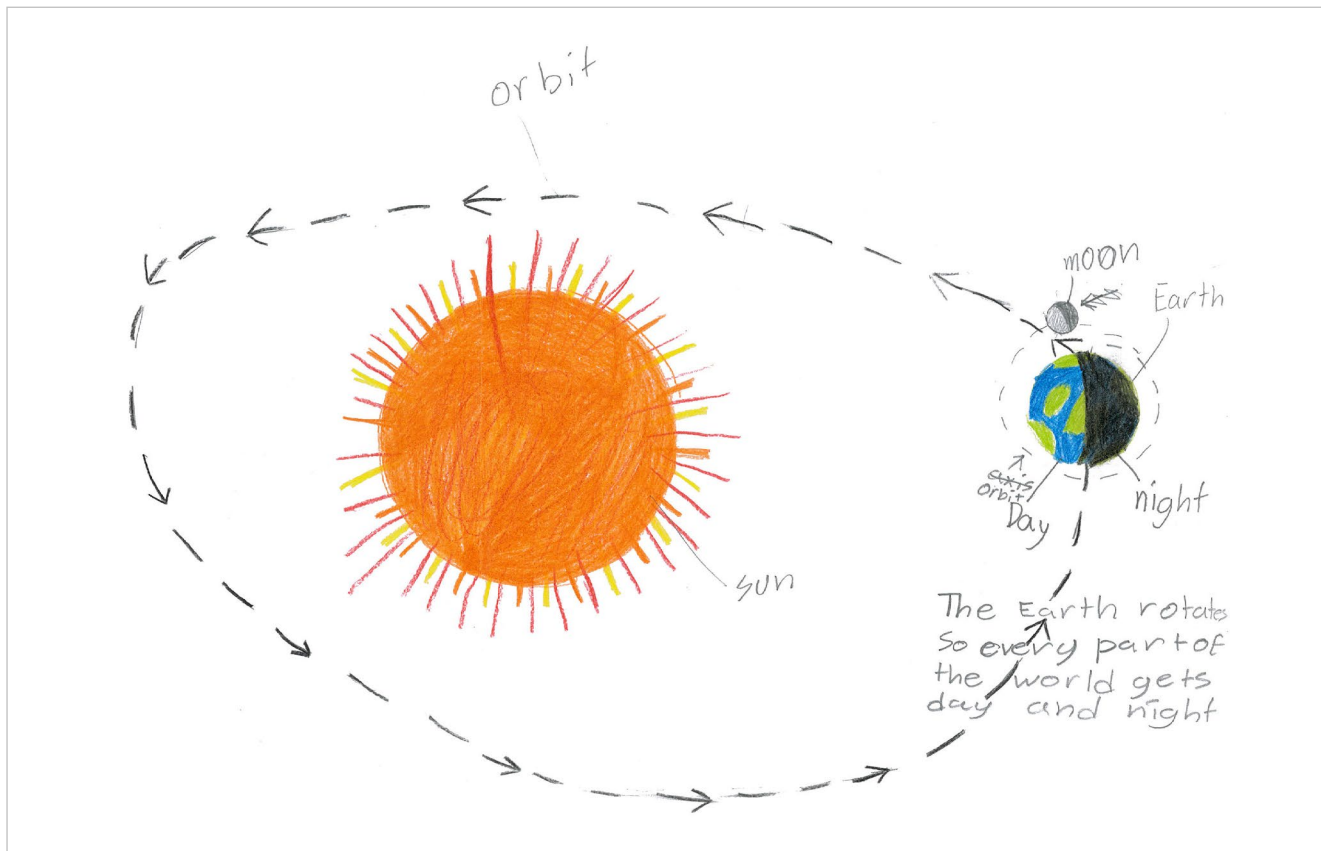
Students were asked to complete an annotated diagram to explain day and night, and to use the key words, 'rotate', 'axis', 'orbit', 'day', 'night', 'Earth' and 'sun'. Students were then asked to consider how being in a different location affects the time of day the sun rises and sets, and to consider the implications of different time zones.



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## Poster: Day and night



### Annotations

Constructs an annotated diagram to show Earth's orbit around the sun and the moon's orbit around Earth.

Identifies that Earth rotates and that the part of the Earth facing the sun is in daylight.

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## Poster: Day and night

Adelaide – 5/9/2012 Sun rose at 6:32 am-Sun will set at 5:58pm.

The day and night comes from one half of the world in the sun's light and the other half of the world in the dark. If you were in China and your friend was in Brazil and it was day for you it would be night for them.

You would have to consider what time to ring because Australia and England are in different parts of the world.

### Annotations

*Identifies that while half of Earth is experiencing day time, the other half is experiencing night.*

*Identifies that location in the world should be considered to identify when to make an international phone call.*

### Annotations (Overview)

*The student uses diagrams and written text to communicate science ideas.*

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## Investigation: Spoons and heat

### Year 3 Science achievement standard

The parts of the achievement standard targeted in the assessment task are highlighted.

*By the end of Year 3, students use their understanding of the movement of the Earth, materials and the behaviour of heat to suggest explanations for everyday observations. They describe features common to living things. They describe how they can use science investigations to respond to questions and identify where people use science knowledge in their lives.*

*Students use their experiences to pose questions and predict the outcomes of investigations. They make formal measurements and follow procedures to collect and present observations in a way that helps to answer the investigation questions. Students suggest possible reasons for their findings. They describe how safety and fairness were considered in their investigations. They use diagrams and other representations to communicate their ideas.*

### Summary of task

Students had been exploring the ways in which heat moves within and between objects. They had discussed hot objects around the home and the materials they were made of. The language of 'conductors' and 'insulators' had been introduced.

Students were provided with an investigation worksheet to record their findings. In small groups, they worked with teacher guidance to perform the investigation and record their findings.

**The teacher discussed safety precautions for handling hot water and hot objects. The water was heated to 50 °C . Students were only permitted to handle the spoons for a short period of time once the teacher had tested the temperature of each spoon.**

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## Investigation: Spoons and heat

### Annotations

Develops an investigable question.

Makes a prediction based on everyday experiences.

Records observations (informal measurements) in a provided table.

States that prediction did not match observations.

Identifies some methods to keep the investigation fair.

Spoons and heat investigation											
1. Investigable question – What happens to <u>the spoons</u> when we <u>heat them up</u> ?											
2. What do you think will happen? I think <u>the plastic spoon will heat up the most</u> because <u>Plastic will heat up, because my Mum has put Plastic in lots of Hot food.</u>											
3. Follow the procedure.– What do we need – * hot water * large mug • spoons made from different materials (plastic, metal, wood and ceramic) What do we do – 1. With adult assistance, pour hot water into the mug. 2. Record the order spoons will be placed into and removed from the mug. 3. Place spoons into the mug at 20 second intervals. 4. Remove each spoon after exactly two minutes and quickly and carefully rate the heat. 5. Complete the table.											
<table border="1"> <thead> <tr> <th>Spoon</th> <th>Heat rating</th> </tr> </thead> <tbody> <tr> <td>1. plastic</td> <td>cool</td> </tr> <tr> <td>2. metal</td> <td>really hot</td> </tr> <tr> <td>3. wood</td> <td>warm</td> </tr> <tr> <td>4. ceramic</td> <td>hot</td> </tr> </tbody> </table>	Spoon	Heat rating	1. plastic	cool	2. metal	really hot	3. wood	warm	4. ceramic	hot	<p>4. Was your prediction correct? <u>No</u></p> <p>What did happen? <u>My Prediction was No</u> <u>My Prediction</u></p> <p>Why do you think this happened? I think this happened because _____</p>
Spoon	Heat rating										
1. plastic	cool										
2. metal	really hot										
3. wood	warm										
4. ceramic	hot										
5. How was the investigation kept fair? * The water kept the same * We had a vote. * The metal Spoon was the hottest											

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## Investigation: Spoons and heat

### Annotations

Identifies methods used to keep the investigation safe.

Identifies how science knowledge can be used by people in their lives.

Explains how objects heat up as a result of heat from other sources (fire, electricity).

6. How was this investigation kept safe?


The teacher Put the hot water in.  
The manger Put the SPOONS in the mug.  
we bed careful to not ~~Put~~ bump the table.

7. What do other people need to know about this spoon and heat investigation?

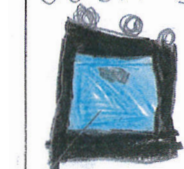
You need to use a Plastic spoon because if you ~~use~~ use a metal spoon it will be very hot.

8. Give some examples of other things that you know heat up?

• lighter • oven • candle • toaster • stove.

because it has fire. 

oven because when you turn it on it heats up.



Oven

candle  
candles heat up ~~by~~ by fire.

when you rub

your hands

together your

Hands will ~~heat~~ heat



a toaster Heats up by electricity.

### Annotations (Overview)

The student uses drawing and written text to communicate observations and ideas.

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## Venn diagram: Features of living things

### Year 3 Science achievement standard

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*Students use their experiences to pose questions and predict the outcomes of investigations. They make formal measurements and follow procedures to collect and present observations in a way that helps to answer the investigation questions. Students suggest possible reasons for their findings. They describe how safety and fairness were considered in their investigations. They use diagrams and other representations to communicate their ideas.*

### Summary of task

Students had completed a unit exploring the diversity of living things and had visited the zoo to observe the different types of animals and the different habitats in which they lived. They had revised the needs of living things, and the difference between living, non-living and dead.

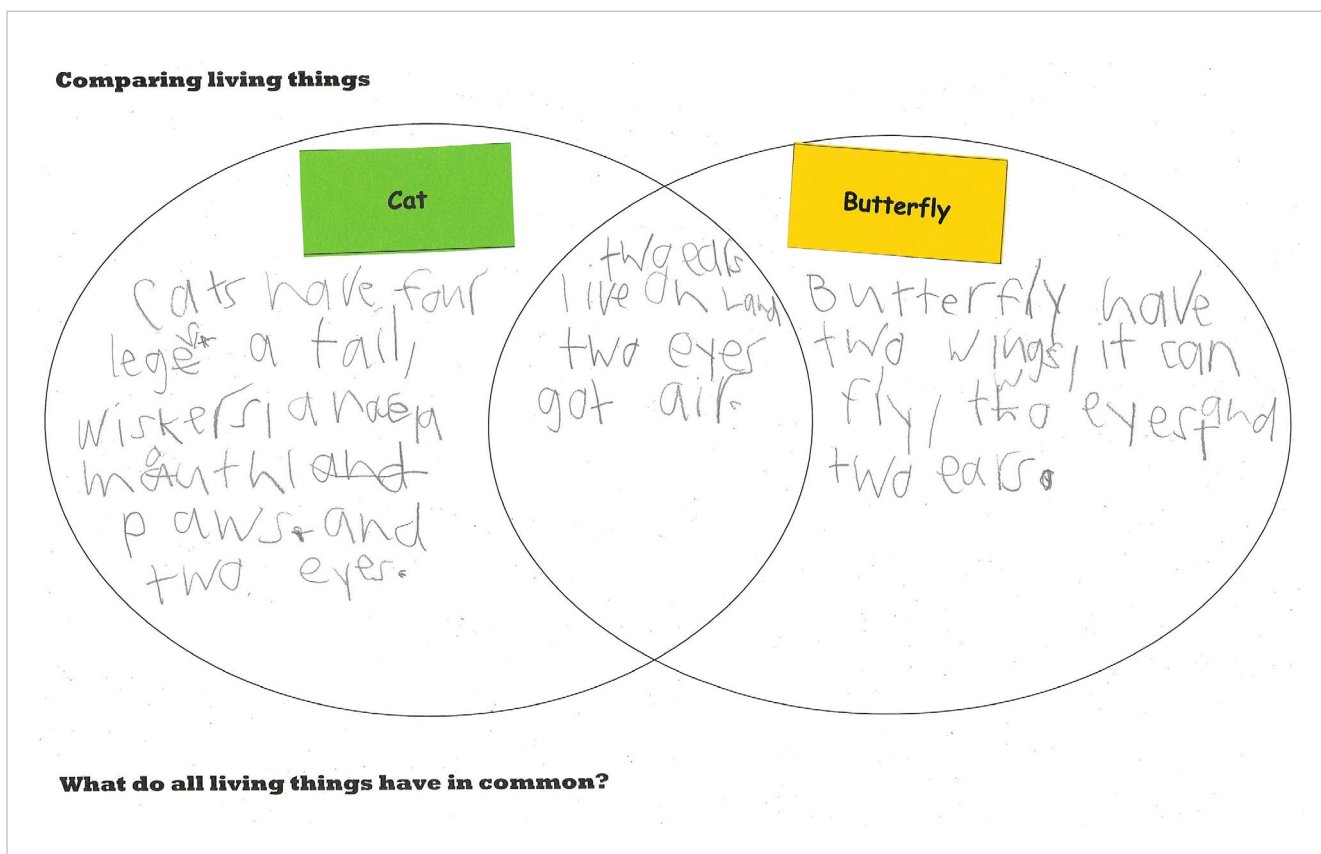
Students selected from a hat the names of two organisms they had previously encountered. They were then asked to complete a Venn diagram to compare the two organisms and draw a conclusion about features common to living things. Students completed the task in a 50-minute lesson.



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## Venn diagram: Features of living things



### Annotations

Identifies a range of features of each selected living thing, including how they move, and how they are structured.

Identifies that the two selected living things both breathe.

### Annotations (Overview)

The student uses written text to communicate observations and ideas.

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## Investigation: Local birds

## Year 3 Science achievement standard

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*Students use their experiences to pose questions and predict the outcomes of investigations. They make formal measurements and follow procedures to collect and present observations in a way that helps to answer the investigation questions. Students suggest possible reasons for their findings. They describe how safety and fairness were considered in their investigations. They use diagrams and other representations to communicate their ideas.*

## Summary of task

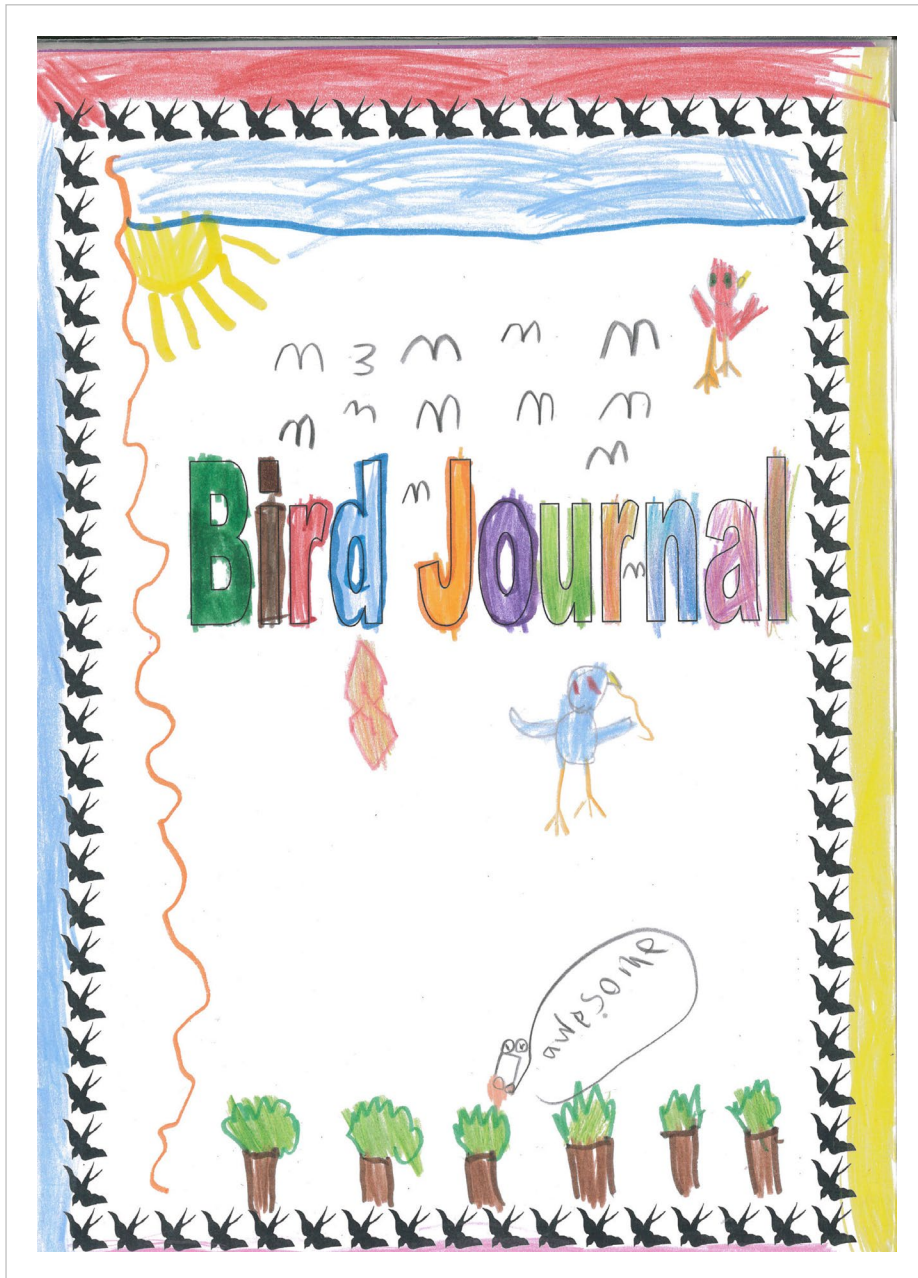
Students developed their science inquiry skills through an investigation of local bird life. They conducted research into common birds in the area and made predictions, based on their experiences (i.e. birds they had seen in the area), about the number of each bird they would observe on a walk through the local area. Students then completed a walk through bushland adjacent to the school to gather data. As a class they shared and discussed their data and represented their data through a graph.

Students also observed feathers, using formal measurements to represent the size of the feather, and were asked to make a prediction about which bird the feather might have come from. They researched their predicted bird and presented their findings.

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## Investigation: Local birds



### Annotations

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## Investigation: Local birds

### Birds I predict I will see around school

Birds we predict that we will see in our walk around the school.		ground	tree	sky
	crow			
	magpie			
	Common Myna			
	Turtle dove			
	pigeon			
	Noisy miner	(	   (	
	Spotted dove			
	Top knot pigeon			

### Annotations

*Uses everyday experiences of a local environment to predict numbers of birds that will be sighted.*













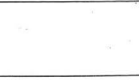
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## Investigation: Local birds

### Annotations

*Follows a procedure to collect and record measurements.*

We observed the following birds living in our neighbourhood.				
	Rosellas			
	Parrots			
	Pigeons			
	Seagulls			
	Galahs			
	Sparrows			
	Magpies			
	Rainbow lorikeets			
	Crows			
	Kookaburra			
	Honey eaters			
	Tawny frogmouth			
	Noddy			

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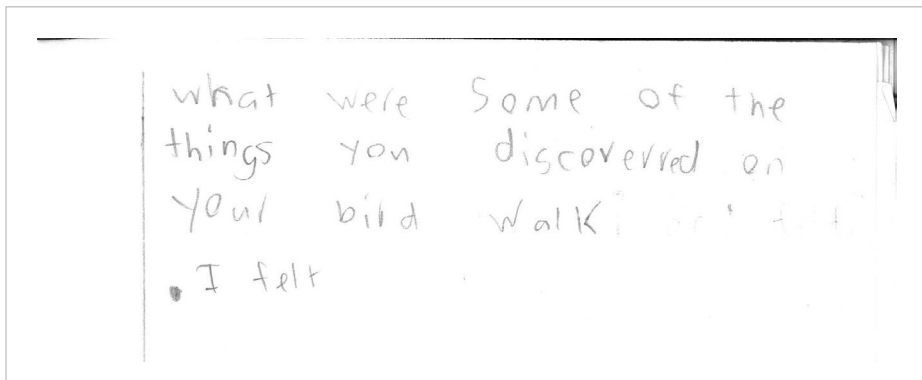
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## Investigation: Local birds



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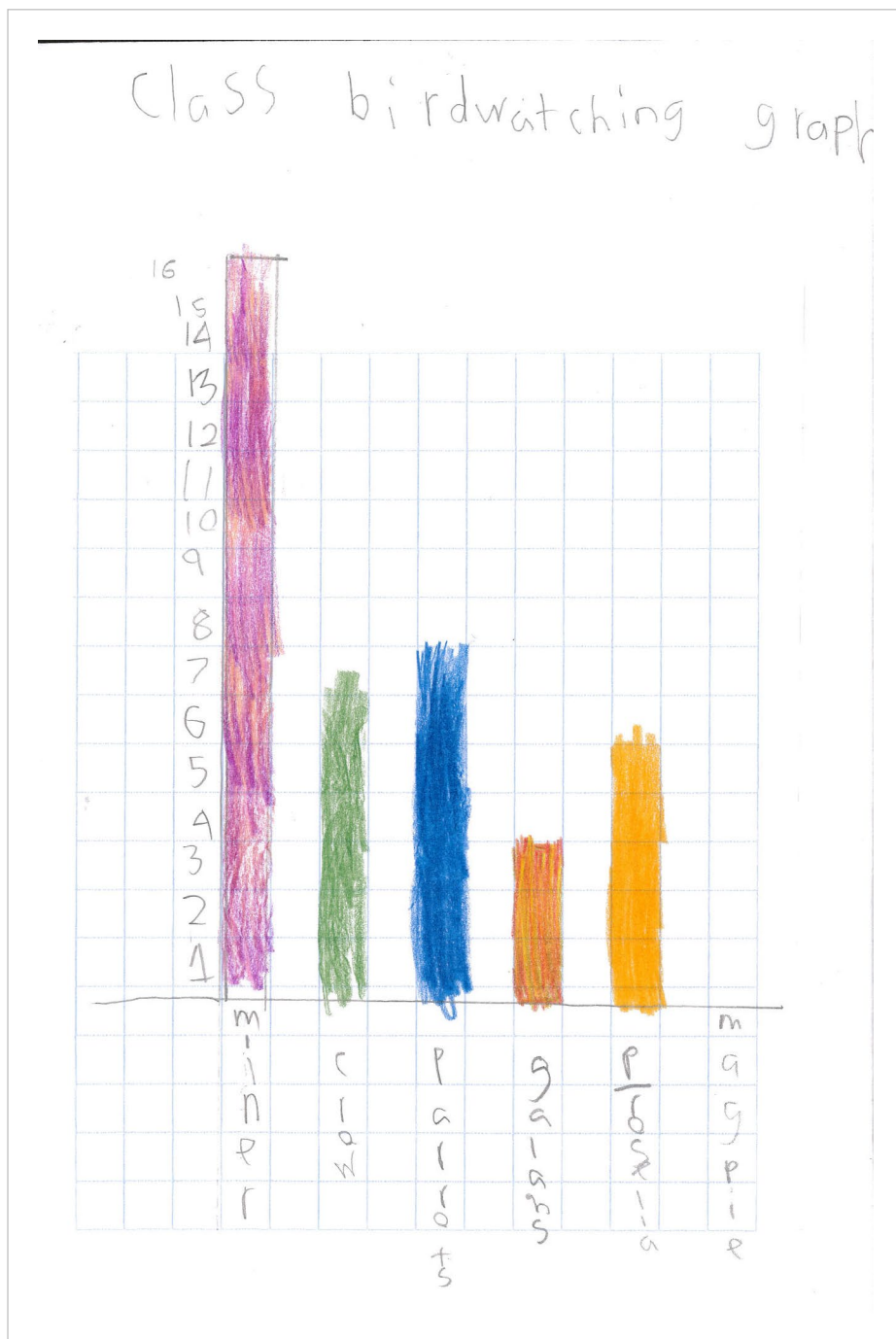
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## Investigation: Local birds



### Annotations

Constructs a column graph, using some graphing conventions, to present observations.

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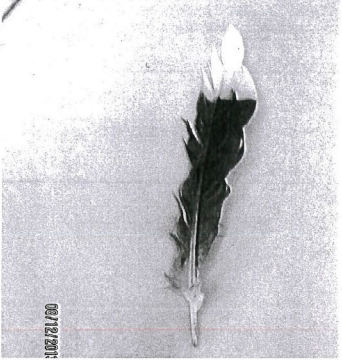
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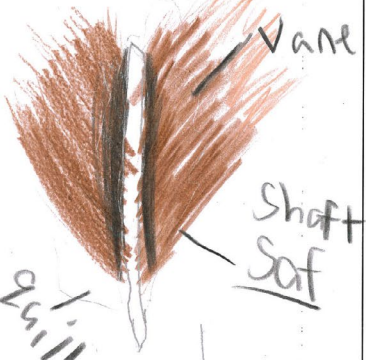
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## Investigation: Local birds

Feather photo



Draw and label a feather



Carefully observe your feather

Colour... brown

Shape... Shape like a L

Size... e 28 cm

Patterns... brown then black

Are there any other interesting features you can record? ~~Yes~~ no

that The wedge tailed eagle  
is the 4th largest eagle  
in the world

### Annotations

Makes and records some observations, including formal measurements.



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## Investigation: Local birds

Draw a picture of the bird that you think the feather may have come from.



### Annotations

Makes a prediction based on feather colour and size.

### Annotations (Overview)

The student uses drawings, graphs and written text to communicate ideas.

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