

## 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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## Science

Year 3  
Satisfactory

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 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 the 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.

# Investigation: Moving shadows

## How do shadows change across the day?

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



Early in the morning  
The shadows are big.



In mid morning the  
shadow gets smaller.



Midday the shadow gets  
bigger for the last time

## Annotations

Records observations of the position of the sun, a tree and its shadow.

## Investigation: Moving shadows

	<p>Mid afternoon the shadow gets a little bit smaller.</p>
	<p>Evening the shadow gets small and then gets bigger again in the morning</p>

Explain the results. When the sun rises the shadow gets smaller. Next when it comes down it gets bigger and it goes over and over again. And The earth rotates around the sun

### Annotations

Identifies that the size of the shadow changes throughout the day.

Recognises that the sun is a source of light and connects the movement of the sun through the sky to the size of the shadows.

### Annotations (Overview)

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

## 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 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.

## Investigation: Disappearing ice cubes

**Ice cube investigation**

① Investigable question -  
What happens to the ice -  
cube when we take it out  
of the freezer?  
Prediction -  
I predict when the ice cube  
is taken out of the freezer it  
will melt into liquid, because, the  
temperature is going up.

The ice is a solid  
when it is in the  
freezer, because the  
temperature in the  
freezer is under zero.  
Then the ice cube  
is taken out of  
the freezer.

② The ice is put on  
a saucer, then  
so the saucer is  
put under the heater

③ The saucer is  
put under the  
heat for a hour  
then it melt, from  
solid to liquid.

④ After a hour and  
the ice was gone,  
because the temperature  
outside the freezer is  
hotter then the temperature  
inside the freezer, so the  
ice cube melted from solid  
to liquid then to ~~gas~~  
gas.

### Annotations

*Develops an investigable question based on everyday experiences.*

*Makes a plausible prediction based on knowledge of change of state.*

*Identifies that ice is solid at temperatures below zero.*

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

*Describes how a solid changes to liquid as a result of adding heat.*

*Identifies that the ice cube has disappeared because the water changed state from solid to liquid to gas 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.

*By the end of Year 3, students use their understanding of the movement of 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 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.

Poster: Day and night

The diagram illustrates the following concepts:

- Earth's rotation:** The Earth spins on its axis, labeled "the axis the Earth spins around itself".
- Moon's orbit:** The Moon orbits around the Earth, labeled "The axis of the Moon spins around the Earth".
- Earth's orbit:** The Earth orbits around the Sun, labeled "Orbit".
- Day and Night:** A yellow sun is shown partially obscured by the Earth. Handwritten text explains: "we have day and night because the Earth spins around its own axis so that makes some parts of the Earth face the sun some times. so the part facing the sun are in the day the part not facing the sun is night the part in the middle is the evening."
- Questions:**
  - 1) Find out what time the sun rises and sets at the moment in Adelaide. Will it be the same for me when I'm in England next week? Explain your answer.  
In Adelaide - 3/19/12 sun rose at 6:32am, sun set at 5:48pm. It will not be the same in England because we were in different time zones.
  - 2) Use your knowledge of day and night to explain what I would have to consider if I wanted to ring next week with a message for you during your Science lesson?  
You would have to consider the time that you ring us, because the sun would not be at two places at once and England is on top and Australia is on the bottom of Earth, that's how we got days and nights.

Annotations

Constructs an annotated diagram to show Earth's orbit around the sun and movement on its axis, and the moon's orbit around Earth.

Explains the cause of night and day on Earth with reference to Earth spinning on its axis.

Identifies that the sun is in different positions in different time zones.

Identifies that Earth's movement and day and night should be considered to identify when to make international phone calls.

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 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.**

## Investigation: Spoons and heat

Spoons and heat investigation											
1. Investigable question – What happens to <u>the spoons</u> when we <u>put them in hot water</u> ?											
2. What do you think will happen? I think <u>the ceramic and the metal spoon will be the hottest</u> because <u>at home I tried it with hot water.</u>											
3. Follow the procedure.- <b>What do we need –</b> * hot water * large mug • spoons made from different materials (plastic, metal, wood and ceramic) <b>What do we do –</b> 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>plastic 1</td> <td>cool</td> </tr> <tr> <td>metal 2</td> <td>very hot</td> </tr> <tr> <td>wood 3</td> <td>warm</td> </tr> <tr> <td>ceramic 4</td> <td>hot</td> </tr> </tbody> </table>	Spoon	Heat rating	plastic 1	cool	metal 2	very hot	wood 3	warm	ceramic 4	hot	4. Was your prediction correct? <u>Yes</u> What did happen? <u>The metal was very hot and the ceramic was hot.</u> Why do you think this happened? I think this happened because <u>the metal gets <sup>really</sup> hot when it is in hot water.</u>
Spoon	Heat rating										
plastic 1	cool										
metal 2	very hot										
wood 3	warm										
ceramic 4	hot										
5. How was the investigation kept fair? <u>Because the mug was the same material. The water was the same temperature.</u>											

### Annotations

*Develops an investigable question.*

*Makes a plausible prediction based on everyday experiences.*

*Records observations (informal measurements) in a provided table.*

*Compares prediction with observations.*

*Identifies how heat (hot water) has an effect on an object (metal spoon).*

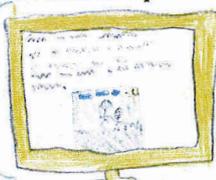
*Identifies two things that were kept the same to make the investigation fair.*

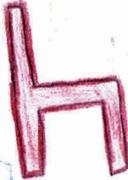
## Investigation: Spoons and heat

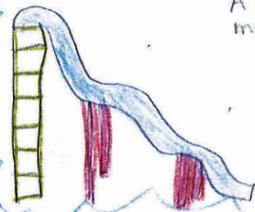
**6. How was this investigation kept safe?**  
 Because Mrs Portier tipped the hot water in the mugs.  
 It was next to the ranger.  
 We didn't move that much.

**7. What do other people need to know about this spoon and heat investigation?**  
 If you need to stir a soup or something hot, use it with a plastic spoon or a wooden spoon. But not with a metal spoon.

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

 A computer heats up if you have used it for a long, long time.

 A chair heats up if you have been sitting on it for a long time.

 A slide heats up on hot days because metals gets very hot.

### 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 (human body, hot days).*

### Annotations (Overview)

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

## Venn diagram: Features of living things

### Year 3 Science achievement standard

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

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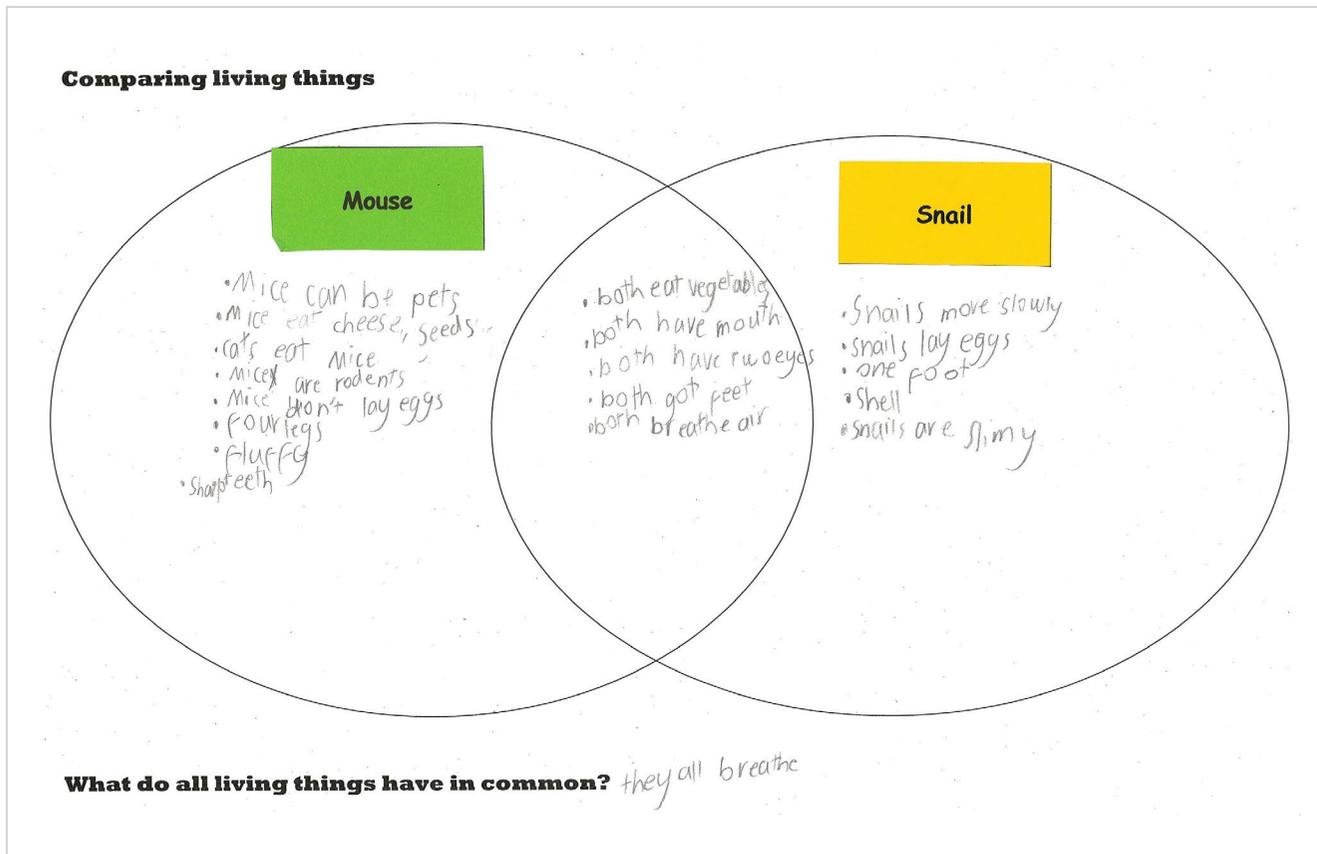
*Students use their experiences to pose questions and predict the outcomes of investigations. They make formal measurements and follow procedures to collect and present observations in a way that helps to answer the investigation questions. Students suggest possible reasons for their findings. They describe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

### Summary of task

Students had 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.

## Venn diagram: Features of living things



### Annotations

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

Identifies that the two selected living things both eat and breathe.

Concludes that a feature common to all living things is that they 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.

### Investigation: Local birds

### Annotations



## 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.

## Investigation: Local birds

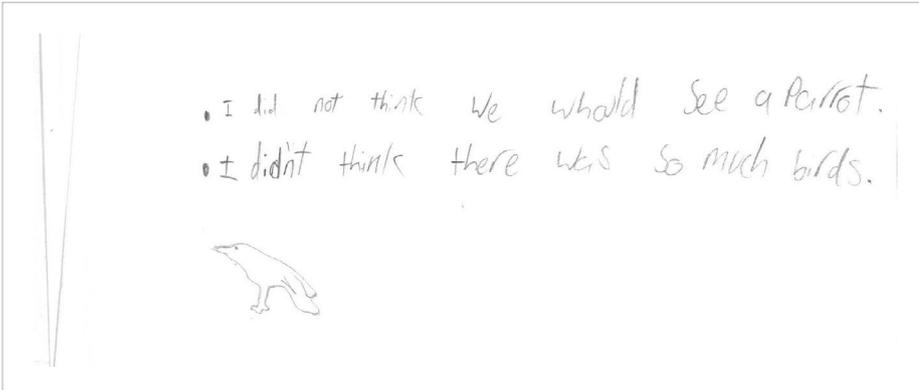
**We observed the following birds living in our neighbourhood.**

	Rosellas			1
	Parrots			
	Pigeons			
	Seagulls			
	Galahs	1 1		
	Sparrows			
	Magpies			
	Rainbow lorikeets			
	Crows			
	Kookaburra		!	
	Honey eaters			
	Tawny frogmouth			

### Annotations

*Follows a procedure to collect and record observations.*

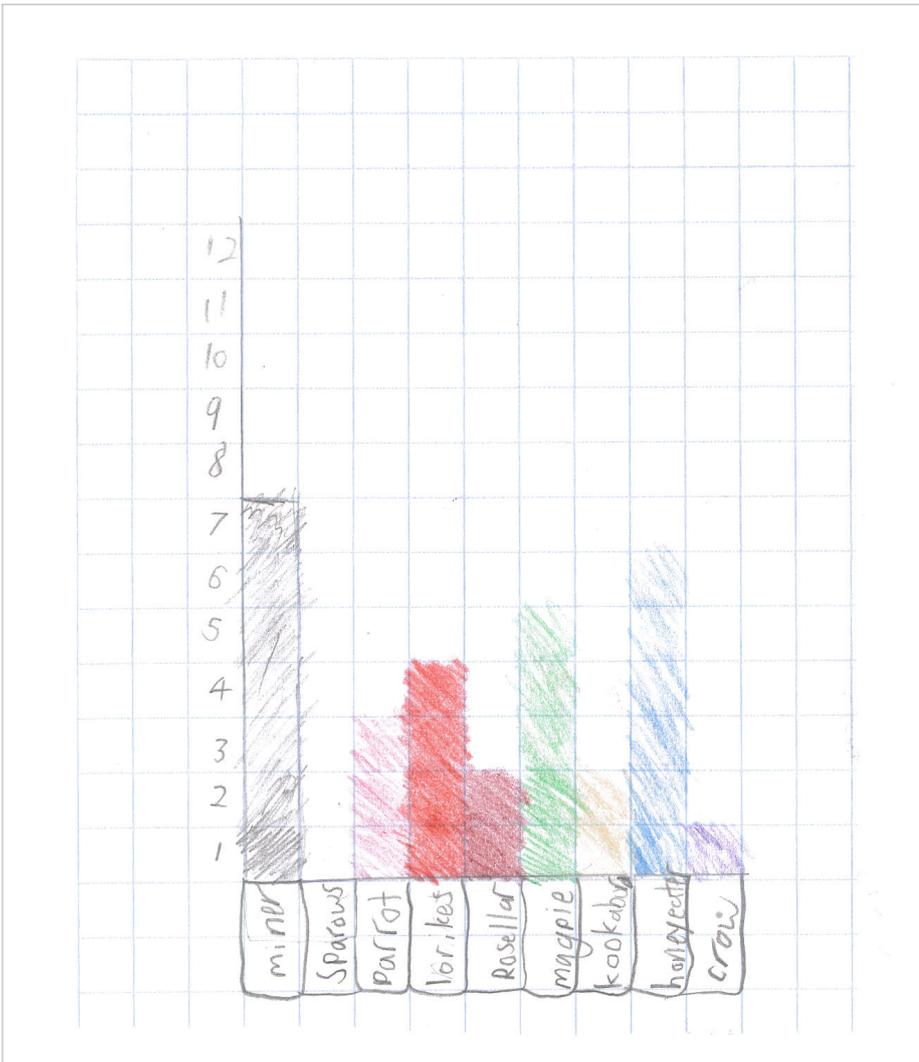
## Investigation: Local birds



### Annotations

*Comments on how predictions compare with investigation findings.*

## Investigation: Local birds



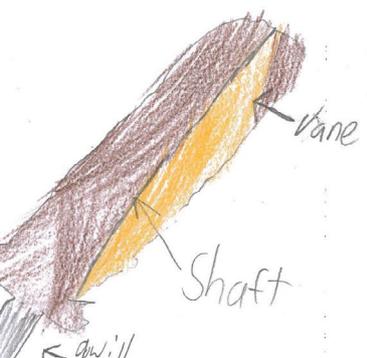
### Annotations

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

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## Investigation: Local birds

<p>Feather photo</p> 	<p>Draw and label a feather</p> 
<p>Carefully observe your feather</p> <p>Colour... <u>brown and orange</u></p> <p>Shape... <u>oval</u></p> <p>Size... <u>12 cm</u></p> <p>Patterns... <u>light and dark</u></p> <p>Are there any other interesting features you can record?</p> <p><u>it has mixed colours</u></p> <p><u>I have never seen an orange feather the quill is sharp.</u></p>	

### Annotations

Makes and records observations, including formal measurements.

## 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.

### Annotations (Overview)

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

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