

Science

Year 3
Above 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. 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 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

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
shadow are long and
to the side.



At Midmorning the
shadows are a little
shorter than what
they were.



At Midday the
shadow is short
and lined up with
the thing making
the shadow.

Annotations

Accurately records observations of the position of the sun in the sky, a tree and its shadow.

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

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Investigation: Moving shadows

Annotations



At Mid afternoon
the shadow is
a little bigger.

In the Evening
the shadow are
long again.

Explain the results.

The Earth rotates around the Sun and as it rotates one side of the Earth is getting further and further away. So the Earth rotates while the Sun stays still. This makes the shadows move.

Explains why the length and position of shadows changes throughout the day using knowledge of Earth rotation on its axis.

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 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

HEAT and ICE Investigation

Prediction-
I predict that the icecube will liquify and then evaporate and turn ~~it~~ it into a gas and float up and when it hits something cold it will turn back into water.

① Then the ~~was~~ water on the plate ev evaporated because of the Heat from the heater.

② The ice block is taken from ~~freezer~~ freezer and put on a plate.

③ The Plate is then Placed in front of a heater glowing red (the lowest heat colour) and left.

④ The 'ice block starts to melt and turned into a liquid Because of the heat from the heater.

Annotations

Makes a plausible prediction based on knowledge of change of state, including understanding of evaporation and condensation.

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 evaporated 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

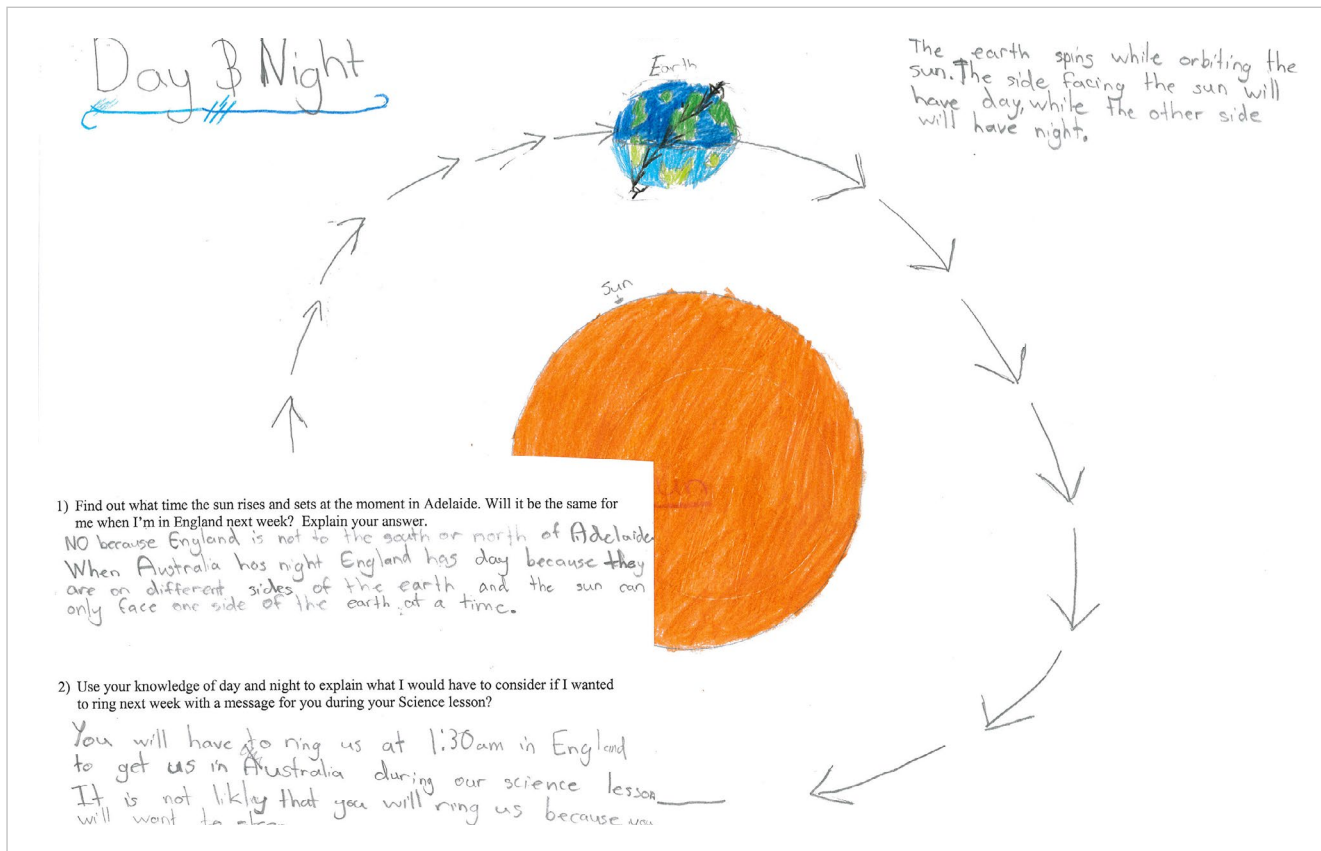
Students had explored different representations of the movement of Earth in relation to the sun, including interactive animations and role plays. They had discussed how day and night occur on Earth and explored the effects of being in different locations on Earth.

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 movement on its axis.

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Poster: Day and night

Annotations

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

Explains why the sun rises and sets at different times for different locations on Earth with reference to the effect of Earth's movement on its axis.

Uses knowledge of Earth's movement and day and night to identify when to make an international phone call.

The earth spins while orbiting the sun. The side facing the sun will have day, while the other side will have night.

- 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.

NO because England is not to the south or north of Adelaide. When Australia has night England has day because they are on different sides of the earth and the sun can only face one side of the earth at a time.

- 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 will have to ring us at 1:30am in England to get us in Australia during our science lesson. It is not likely that you will ring us because you will want to sleep.

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.

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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 metal spoon will get the hottest</u> because <u>metal is a good conductor</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>Very 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	Very hot	3. wood	warm	4. ceramic	hot	<p>4. Was your prediction correct? <u>yes</u> What did happen? <u>The metal spoon was the hottest, then the ceramic spoon, then the wood spoon and the plastic spoon was the coolest.</u> Why do you think this happened? I think this happened because <u>metal was a very good conductor.</u></p>
Spoon	Heat rating										
1. plastic	cool										
2. metal	Very hot										
3. wood	warm										
4. ceramic	hot										
5. How was the investigation kept fair? <u>The investigation was kept fair because the spoons were kept in the hot water for 2 minutes each and we pased the spoons quikly so that they stayed the same temperature.</u>											

Annotations

Develops an investigable question.

Makes a plausible prediction based on properties of materials.

Records observations (informal measurements) in a provided table.

Compares prediction with organised observations.

Identifies that the metal spoon was the hottest because it was a good conductor.

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

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Investigation: Spoons and heat

6. How was this investigation kept safe?


The investigation was kept safe because the science teacher poured the hot water into each group's mug and only the manager of each group were to have contact with the hot water and the mugs.

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


People need to know that when stirring some sort of hot liquid that a wooden or plastic spoon is safer to stir with not a metal spoon because plastic and wooden spoons are not good conductors.

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


An Iron heats up by Conduction.



When we rub our hands together they heat up by a movement called "Friction." Rough surfaces give off more heat than smooth surfaces.



A metal saucepan will heat up because metal gets really hot and that's why we have silicon or plastic on the metal handle of the saucepan.



Annotations

Identifies methods used to keep the investigation safe.

Identifies how knowledge of conductors and insulators can be used by people in their lives.

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

Identifies that objects can be made up of mixtures of conductors and insulators in order to meet a particular purpose.

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

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

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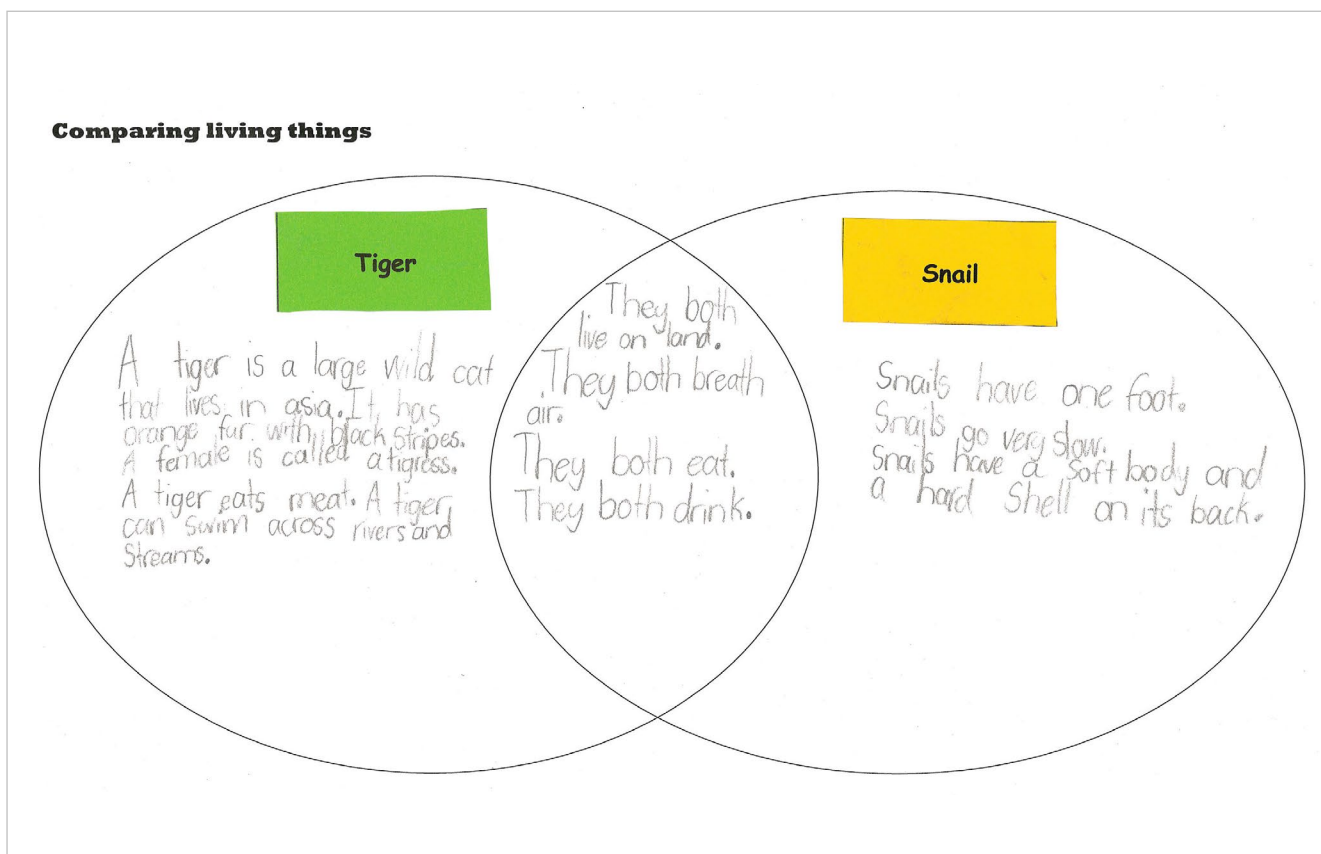
Students use their experiences to pose questions and predict the outcomes of investigations. They make formal measurements and follow procedures to collect and present observations in a way that helps to answer the investigation questions. Students suggest possible reasons for their findings. They describe 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, drink and breathe.

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Venn diagram: Features of living things

What do all living things have in common?

They all need air.

They all need to eat and drink.

They all grow.

They all move. They all produce more.

Annotations

Concludes that a feature common to all living things is that they breathe, eat and drink, grow, move and reproduce.

Annotations (Overview)

The student uses written text to communicate observations and ideas.

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Investigation: Local birds

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 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 <i>top notch</i>			
	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

We observed the following birds living in our neighbourhood.

	Rosellas			
	Parrots			
	Pigeons			
	Seagulls			
	Galahs			
	Sparrows			
	Magpies			
	Rainbow lorikeets			
	Crows			
	Kookaburra			
	Honey eaters			
	Tawny frogmouth			
	Noisy miners			

Annotations

Follows a procedure to collect and record observations, using tally marks consistently.

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Investigation: Local birds

Annotations

Compares predictions with findings, and recognises that predictions based on the birds within the school grounds might not match other environments.

as soon as we waked out of the school grounds there was not many crows or magpies.
I could not beleive we found some rabow lorikeets, parrots and Rosellas because I've only ever seen 1 parrot in my life and now I've sene a few more

There was heaps of noisy minners more than I thoght!

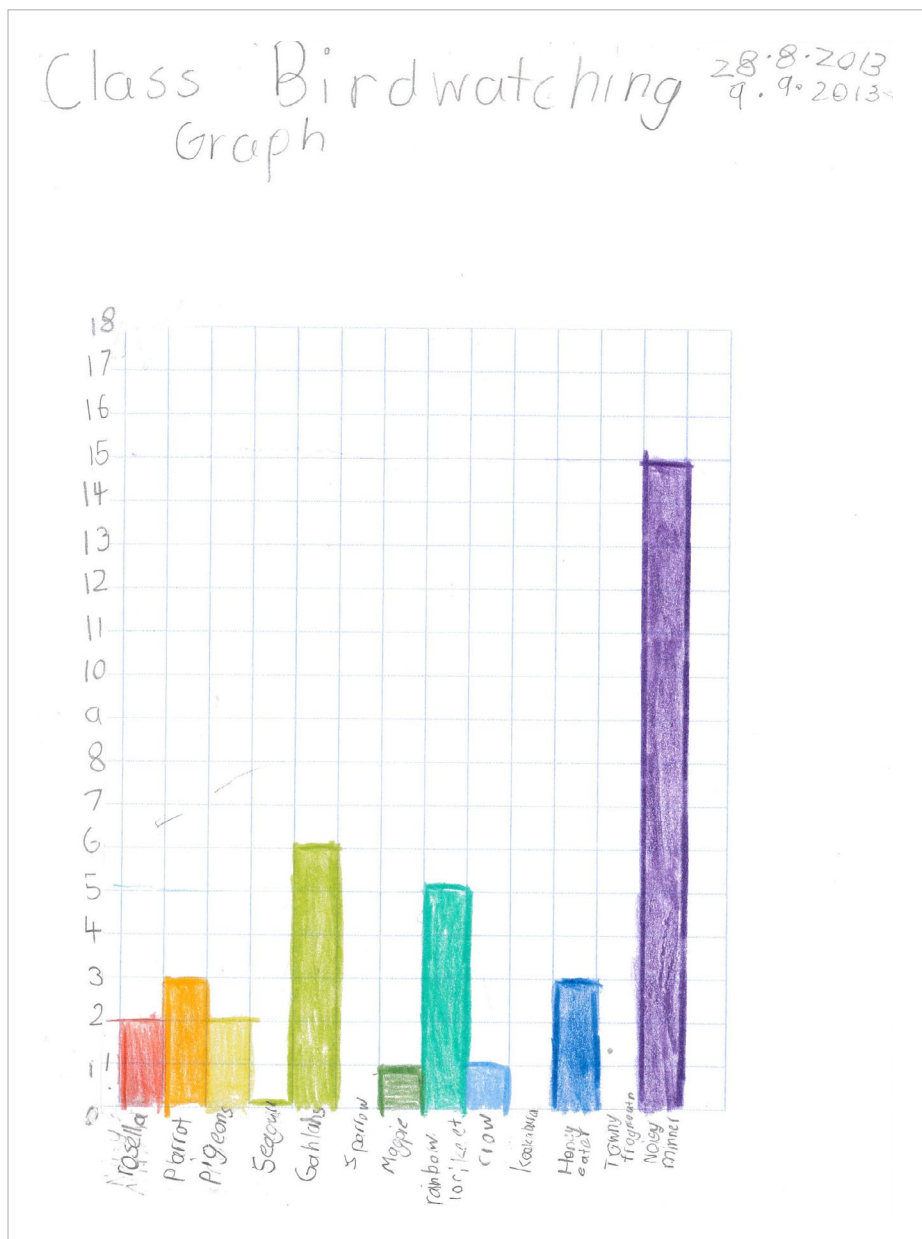
What were some of the things you discovered on your bird walk?

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Investigation: Local birds



Annotations

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

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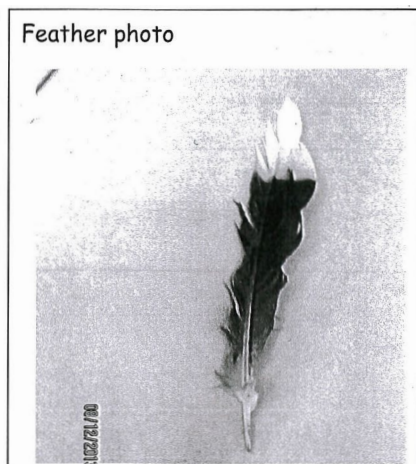
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Investigation: Local birds

Annotations



Carefully observe your feather

Colour... silver, black and white

Shape... banana, rainbow

Size... 12 cm

Patterns... half silver and black and the other half is white

Are there any other interesting features you can record?

at the bottom it's fluffy and at the top it is straight. The quill is made of one side of the feather is bright white.

Makes and records detailed 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.

Seagull

Seagulls live mostly near the sea and sometimes fly over it.

Orange beak
Red beak

Seagulls are black, grey and white.

Tail feathers

Seagulls have bright eyes.

Seagulls have little red/orange feet

Annotations

Makes a plausible prediction based on feather colour and size.

Constructs an annotated diagram to communicate information.

Annotations (Overview)

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

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