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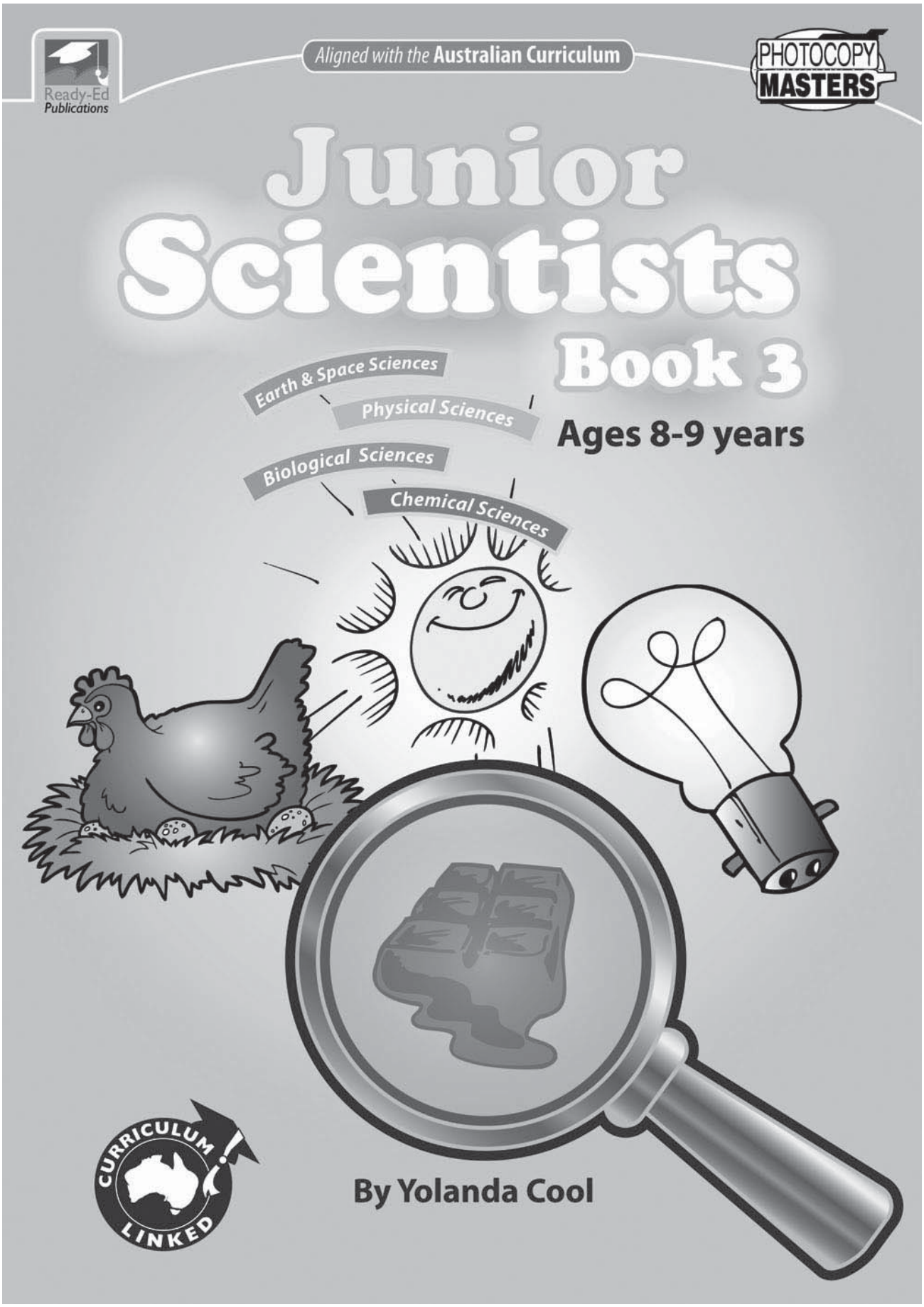


Contents

Australian Curriculum Links

Biological Sciences

Living things can be grouped on the basis of observable features and can be distinguished from non-living things (ACSSU044).

Chemical Sciences

A change of state between solid and liquid can be caused by adding or removing heat (ACSSU046).

Earth and Space Sciences

Earth's rotation on its axis causes regular changes, including night and day (ACSSU048).

Physical Sciences

Heat can be produced in many ways and can move from one object to another (ACSSU049).

Human Endeavour: Nature and Development of Science

Science involves making predictions and describing patterns and relationships (ACSHE050).

Human Endeavour: Use and Influence of Science

Science knowledge helps people to understand the effect of their actions (ACSHE051).

▷ Teachers' Notes Living Things

Curriculum links: recognising characteristics of living things such as growing, moving, sensitivity and reproducing. Recognising the range of different living things. Sorting living and non-living things based on characteristics.

Important Words:

living, non-living, plant, animal, insect, characteristics, excrete, grow, reproduce, respire, water, air, wastes, eliminate.

Concept:

- Recognising how living things are different to non-living things.

Teaching Ideas – Sheet 1:

1. Explain that human beings, animals, plants and insects are all classed as living things.
2. Explain that all living things have six main common characteristics which are known as 'life processes' and form the study of biology:
   - They grow
   - They use air and water
   - They eliminate waste
   - They move
   - They digest food
   - They can reproduce
3. Instruct the class to complete the activity sheet. Create in-class charts of the characteristics of living things from the students' examples. Example for chart: These living things can grow.

Teaching Ideas – Sheet 2:

1. Go for a walk around the school and get the students to complete the second activity. This activity reinforces the concept that living things share six characteristics.

Teaching Ideas – Sheet 3:

1. As a class collect examples of living and non-living things from the local environment (school/home). Set up a display and use the collected objects to stimulate questioning and discussion.
2. Encourage the class to sort, classify and group the objects. Develop language skills by getting them in pairs to say, "This is living because…" or "This is non-living because..."
3. Students can complete the activity sheet.

Living Things 1

❍ Write a sentence about living things:

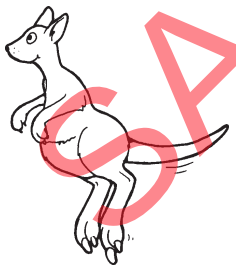
Living things _____

_____

Draw or paste a picture of **living things**:

Growing	Taking in food	Using air and water

❍ What are these **living things** doing?



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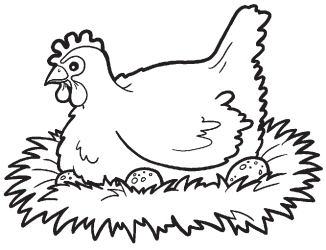

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Ready-Ed Publications

Living Things 2

❍ Walk around the school. Observe different types of plants and animals.

Write down three examples under each heading.

Animals	Plants
1. _____	1. _____
2. _____	2. _____
3. _____	3. _____

❍ Answer Yes or No for each example you have found.

	Animal 1	Animal 2	Animal 3
Do I grow?			
Do I reproduce?			
Do I need water & air?			
Do I move?			
Do I eliminate waste?			
Do I take in food?			

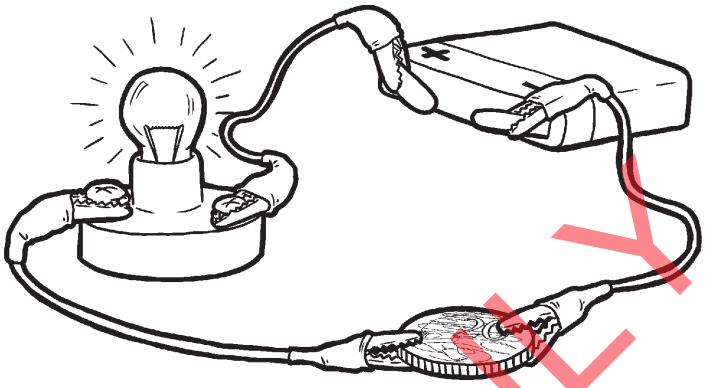
	Plant 1	Plant 2	Plant 3
Do I grow?			
Do I reproduce?			
Do I need water & air?			
Do I move?			
Do I eliminate waste?			
Do I take in food?			

The Transfer of Heat 1

Experiment: How some objects transfer heat.

Materials:

- **4.5 volt battery**
- **3 coloured clip leads**
- **small light bulb in bulb holder**
- **sticky tape**
- **Test items: paper clip, coin, aluminum foil, pen, elastic band, plastic spoon.**



Process:

1. Clip one end of lead (1) to the + end of battery and one end of lead (2) to the - end of battery.
2. Clip the free end of lead (1) to a screw terminal of the bulb holder. Note: make sure that it doesn't touch the bottom of the bulb. Clip one end of lead (3) to the other screw terminal of bulb holder.
3. Place a test item on the table and clip lead (2) from the battery and lead (3) from the bulb, to the object.
4. Watch if the bulb lights up. If it lights up then the object conducts electricity (heat). If it doesn't light up, it is an insulator (doesn't allow electricity (heat) to pass through it).
5. Draw up a table like the one below and record your results.

Item Tested	Conductor	Insulator

Which items are bad conductors of electricity?

_____

Are metal objects good or bad conductors of electricity? Explain.

_____

IMPORTANT: Never use electricity from a socket for any experiment as you will get an electrical shock and it may harm you.

The Transfer of Heat 2

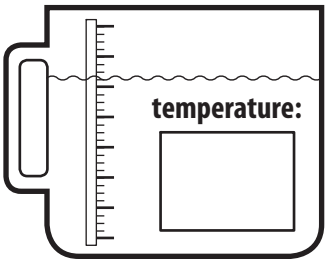
Experiment: How heat travels.

Materials:

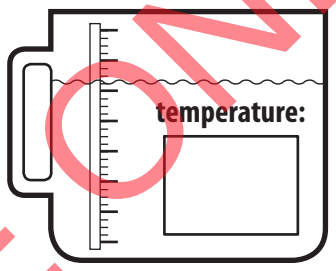
- **2 beakers of water at room temperature ¾ filled**
- **thermometer**
- **3 cold metal nuts**
- **3 hot metal nuts**
- **Safety gear: tongs with rubber grip ends, clear goggles and gloves.**

Process:

1. Record the temperature of the water in both beakers using a thermometer.



Beaker 1



Beaker 2

2. Keeping the thermometer in the beakers, use the tongs to place one hot metal nut in beaker 1.

Watch the thermometer as the heat flows from the nut into the water. Add the other two metal nuts, one at a time, to the water and observe the thermometer. Record the temperature each time.

3. Repeat the experiment with cold metal nuts by adding one nut at a time into beaker 2.

Temperature of Beaker 1 Adding Heated Metal Nuts		
+ 1	+2	+ 3

Temperature of Beaker 2 Adding Cold Metal Nuts		
+ 1	+2	+ 3

Conclusion: Do more nuts make the water hotter or colder; why do you think this is so?

_____

_____

Teachers' Notes — Predicting Change

Curriculum link: making predictions about change and events in our environment.

Important Words:

environment, measure, observe, record, evidence, change, process, local, habitats, adapt, survive.

Concept:

- Understanding that observing and measuring change helps us to predict future change.

Teaching Ideas:

1. Discuss as a class how change is always taking place around us in our environment. Tell students that we don't notice a lot of the changes that take place because they occur so slowly. Over time, small changes can result in big changes. Learning to observe, measure, and record change is an important step in predicting changes that happen in our environment.
2. Some changes are easy to predict and some are not. As humans we rely on patterns to help us predict changes.
3. In class discuss the difference between:
   - *The process of change (e.g. the breaking of a tree branch, which we can observe).*
   - *The evidence of change (e.g. a branch on the ground).*
4. Students can individually complete the activity sheet.

Predicting Change

❍ Look at the pictures. Draw or describe what you think will happen next.

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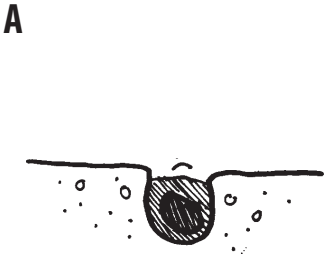

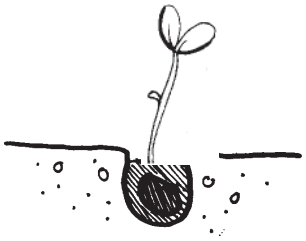

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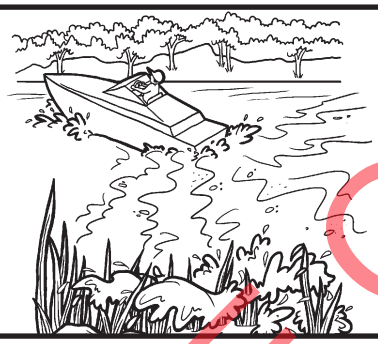

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