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LESSON 9

ENDANGERED SPECIES

CONTENT DESCRIPTIONS	<p>Science Understanding</p> <p>Biological sciences</p> <p>Living things have structural features and adaptations that help them to survive in their environment (ACSSU043)</p> <p>Science as a Human Endeavour</p> <p>Nature and development of science</p> <p>Science involves testing predictions by gathering data and using evidence to develop explanations of events and phenomena (ACSHE081)</p> <p>Use and influence of science</p> <p>Scientific knowledge is used to inform personal and community decisions (ACSHE217)</p> <p>Science Inquiry Skills</p> <p>Questioning and predicting</p> <p>With guidance, pose questions to clarify practical problems or inform a scientific investigation, and predict what the findings of an investigation might be (AC SIS231)</p> <p>Planning and conducting</p> <p>With guidance, plan appropriate investigation methods to answer questions or solve problems (AC SIS086)</p> <p>Processing and analysing data and information</p> <p>Construct and use a range of representations, including tables and graphs, to represent and describe observations, patterns or relationships in data using digital technologies as appropriate (AC SIS090)</p> <p>Communicating</p> <p>Communicate ideas, explanations and processes in a variety of ways, including multi-modal texts (AC SIS093)</p>
RESOURCES	<p>Thesaurus Internet Research resources on endangered species Presentation software (optional)</p>
SKILLS	<p>Researching Investigating</p> <p style="text-align: right;">Recording Reporting</p>
TECHNOLOGY APPLICATION	<p>Using the internet for research Using multimedia (optional) Using desktop publishing programs (optional) Using a digital camera or video (optional) Building a web page (optional)</p>

ACTIVITIES

- Pair students up. Have each pair develop a definition for the term “endangered”.
- As a class share these definitions, looking for common elements. Develop a class definition for the term.
- Use a thesaurus to list synonyms for “endangered”. Ask the students to copy the definition and synonyms onto their worksheet (“Endangered species”).
- Make explicit that when a species becomes endangered, its numbers have become so low that it cannot maintain its population. Some survival problems facing the species could be:

climate changes	destruction of its habitat	pollution
disease	reproduction problems	competition for food
- Ask the students to list species they believe are endangered and to classify them as Australian or from the rest of the world.
- Some Australian species that are endangered are:

brush-tailed phascogale	swift parrot
eastern quoll	superb parrot
tiger quoll	pink cockatoo
Leadbeater’s possum	broilga
mountain pygmy possum	diamond python
common dunnart	carpet python
helmeted honeyeater	Murray cod
regent honeyeater	Eltham copper butterfly
malleefowl	various species of frogs
- As a class, select one of these to research together. Model the process for the students, discussing and demonstrating how to gain information about the endangered species, and create a profile of the species.
- The information should include:
 - The name of the plant or animal.
 - Its habitat.
 - The present population.
 - Areas where it can still be found.
 - A drawing or photo of the plant or animal.
 - The reasons why it is endangered.
- Additional information could include what is being done to protect the species.
- Divide the students into groups and assign each group an endangered species to research and prepare a report on. The report can be presented to the class orally, as a slide show, a poster, a website or a movie. Students should record notes on their worksheet (“Endangered species report”).
- As a class, discuss what adaptations are necessary for endangered species to survive.
- Predict what might happen if an endangered species becomes extinct.

Have each student complete a self-evaluation sheet, see page 85. Copy or scan it and place it in the student’s portfolio.

ASSESSMENT

LANGUAGE

Introduce and explain the following terms:

- | | | |
|---------------------------------|--------------------------|-------------------------|
| brush-tailed phascogale species | pink cockatoo threatened | dying out |
| endanger | mountain pygmy possum | regent honeyeater |
| eastern quoll | broilga | Murray cod |
| swift parrot | rare | few |
| endangered | common dunnart | malleefowl |
| tiger quoll | diamond python | Eltham copper butterfly |
| superb parrot | scarce | organism |
| infrequent | helmeted honeyeater | uncommon |
| Leadbeater’s possum | carpet python | unusual |

Experimenting
Observing

Recording
Working in a group

SKILLS

TECHNOLOGY
APPLICATION

ACTIVITIES

Using a digital camera (optional)
Using a Video Flex camera or a digital microscope (optional)
Using presentation software

- Ask the students: "What is a crystal?" Show them some sugar, table salt, rock salt, jelly crystals and crystallised honey. If possible, borrow some crystals from the local secondary college.
- Give groups of students a sample of each type of crystal. Have the students view them under microscopes, a digital microscope or a Video Flex camera.
- Ask the students to draw the crystals and write what they observed on their worksheet ("Crystals").
- Ask the students to generate a list of questions about crystals.
- Have the students share what they have written. Record what they say.
- As a class, write a definition of the word "crystal". Have the students record this on their worksheet ("Crystals facts"). Make explicit that many solids, from diamonds to sugar, are made of crystals. Minerals are in the form of crystals.
- Have the students draw a crystal on their worksheet ("Crystals facts"), then complete the cloze activity:
Crystals always have s _ _ _ ght edges. They all have f _ _ t sides. Each of the angles is r _ _ lar and they are geometrical sh _ _ s (straight, flat, regular, shapes).
- Group the students and explain that each group will make climbing salt crystals. Discuss safety precautions, fair testing and variables.
- Have each group cut the top off a PET drink bottle so that it is about 20 cm high and half fill it with table salt. Prepare a cup of saturated salt solution by adding salt to hot water until no more will dissolve. Pour this hot salt solution over the dry salt in the container until the dry salt is completely covered. Place the container on the windowsill, leave it undisturbed and observe it over a period of several weeks.
- Salt crystals will "climb" up and over the edge of the container. If the container can be left for a long time undisturbed, all of the water will evaporate and a semi-hard material will be left – rock salt.
- Observe the crystals with a magnifying glass and have the students record how they made their "climbing salt crystals" on their worksheet ("Climbing salt crystals"). Let them record their observations of the crystals over a period of four weeks. Students decide how to do this themselves; they could use a digital camera.
- Discuss methods of recording data. Ask the students: "Were some methods better than others? What could be improved? How could we do this differently? Which units of measure were the most appropriate?"
- Make explicit that you were exploring the ways solids – crystals – changed in different situations. Solids have observable properties and behave in different ways. Discuss the fact that not all materials can be easily classified on the basis of their observable properties.

Ask the students to prepare an electronic presentation describing the process of making climbing salt crystals. Note any scientific language they use on the assessment record sheet, see page 110. Keep a copy of the presentation for the student's profile.

ASSESSMENT

LANGUAGE

Introduce and explain the following terms:

crystal	monocline	cubes	saturate
geometric	crystalline	hexagon	tetragon
octahedra	flat	mineral	
crystallise	evaporate	mix	
straight	solid	heat	