

What Do Living Things Need?



Focus: Students observe living things through direct experience and visual media, and identify similarities and differences in their specific needs.

Specific Curriculum Outcomes

Students will be expected to:

- 36.0 observe and identify similarities and differences in the needs of living things [GCO 1/3]

Performance Indicators

Students who achieve these outcomes will be able to:

- communicate what a plant such as a tree or houseplant needs to survive
- communicate what a variety of animals need to survive

NOTES:

Attitude Outcome Statements

Encourage students to:

- consider their observations and their own ideas when drawing a conclusion [GCO 4]
- work with others in exploring and investigating [GCO 4]

Cross-Curricular Connections

Social Studies

Students will be expected to:

- recognize that all people have needs and wants [1.4.1]

English Language Arts

Students will be expected to:

- speak and listen to explore, extend, clarify, and reflect on their thoughts, ideas, feelings, and experiences [GCO 1]
- interpret, select, and combine information using a variety of strategies, resources, and technologies [GCO 5]
- create texts collaboratively and independently, using a variety of forms for a range of audiences and purposes [GCO 9]

Getting Organized

Components	Materials	Before You Begin	Vocabulary
• <i>Ordinary Amos and the Amazing Fish</i> (Read Aloud) • Science Card 6 • Science Cards 2 and 3 (optional) • <i>What Is the Inquiry Process?</i> poster • BLM <i>Plant Needs Plan</i> • BLM <i>Plant Needs Results</i> • IWB Activity 7	• plants from the Growing Plants investigation • salt water • vinegar • soil • garden tools • cardboard boxes • scissors • students' Science Folders • students' Science Journals	• Sort through the plants from the Growing Plants investigation to find plants of approximately the same height and health to enable a valid comparison.	• basic needs • shelter

Safety

- Discuss safety procedures before beginning any investigation.

Science Background

- The basic needs that all living things share are food, water, air, and shelter.
- Air is a mixture of nitrogen, oxygen, carbon dioxide, water vapour, and other gases.

- Animals require oxygen for respiration, which is the process in which their cells break down glucose to release usable energy. Plants require both carbon dioxide (to make food through photosynthesis) and oxygen (for respiration).

Possible Misconceptions

- Students may wonder about the requirement for air and how it applies to animals that live in lakes, rivers, ponds, and oceans. Many animals that live under water, such as fish, have specialized body parts (gills in the case of fish) to let them get their oxygen from water. Other water-dwelling animals, such as dolphins, breathe air but are able to remain under water for long periods of time. Underwater plants get the carbon dioxide and oxygen they need from the water.

ACTIVATE

Read Aloud: *Ordinary Amos and the Amazing Fish*



Summary

In this humorous story, a man tries to catch a fish but ends up getting caught himself and kept as a pet under water by a family of fish.

Before Reading

Ask students if they have pets or if they have ever taken care of a pet. Ask:

- What kinds of things did the pet need?
- How did you help take care of the pet?

Tell students that you will be reading a story about a surprising pet. Ask them to listen to discover what things are provided for the pet.

During Reading

Prompts for discussion during reading could include:

Pages 2–3:

- Does Amos look happy or sad? Why do you think that is?

Pages 4–5:

- Have you ever been fishing?
- What did you do with the fish you caught?
- Why do people fish?

Pages 10–11:

- What do you think will happen to Amos now?

Pages 14–15:

- How is a “person bowl” like a “fish bowl?” How is it different?
- Why did the fish need to put Amos in a special bowl to keep him alive under water?

Pages 17–18

- Did Amos like the chair?
- What might you put in a fish bowl?

Pages 18–19:

- Did Amos get fed ‘people’ food or fish food?
- What would you feed a pet fish?

Pages 20–21:

- Does Amos have everything he needs in his “person bowl?”
- Why is Amos not happy?

Pages 24–25

- Why is it important to look after your pet every day?

After Reading

Ask students to imagine that they were in a “person bowl” under water. Ask:

- What things would you *need* to have with you?
- What things would you *want* to have with you?

Have students draw a picture of themselves in a “person bowl” with some of the things that they would need. Alternatively, using chart paper or the IWB, draw a “person bowl” and stick figure and have students come up and draw and/or label various things that they would need.

Needs and Wants Walls Activity

Label one wall as the “needs” wall and one wall as the “wants” wall. Ask questions about whether something is a “need” or a “want.” For example:

- Is water to drink a want or a need?
- Is soda to drink a want or a need?
- Is healthy food a want or a need?
- Is the latest video game a want or a need?

To broaden students’ thinking about wants and needs, have them continue the activity while thinking about the wants and needs of animals. Ask:

- Does a dog want or need a dry place to sleep?
- Does a dog want or need a new chew toy?

CONNECT



Animal Needs

Have students look at Science Card 6. Ask questions such as:

- What needs are shown in the pictures?
- What else does each living thing need?
- How are the living things' needs the same? How are they different?

The following needs are represented in the images on the card:

Water	Food	Shelter	Air/oxygen
- the dog is drinking water from a pond - the arctic char lives in water - the water lily floats on the surface of the water and draws in water through its roots	- the chipmunk is eating a berry - the puffin is eating capelin - the water lily, like all green plants, makes its own food through photosynthesis (sunlight + water + carbon dioxide --> glucose + oxygen)	- the polar bear is in a shelter it dug from snow - the snail carries its shelter with it (its shell)	- all of the land animals breathe air, which contains oxygen - the fish gets oxygen from water - the water lily absorbs carbon dioxide from the air for photosynthesis



Consider referring to Science Card 2 and Science Card 3. Ask students about the needs of the plants and animals shown on these cards. The pitcher plant on Science Card 3 is an interesting case of a plant that gets some of its food from insects it traps. (The pitcher plant also makes its own food through photosynthesis.)

You may choose to begin a KWLM chart for needs of living things. Refer to the chart often to allow students to add information and any new questions.

Allow students time at the Curiosity Centre to explore any questions they have about animal needs, and to pose new questions for the I Wonder Wall.

Plant Needs Inquiry

Explain to students that they will be using the plants they grew earlier in the unit to investigate plant needs. Direct students' attention to the *What Is the Inquiry Process?* poster and review the steps of the inquiry process with them.



Step 1: Ask a Question and Make a Plan

As a class, brainstorm questions about plant needs that the students could investigate. Examples could include:

- What happens if I don't water my plant?
- What happens if I water my plant with vinegar instead of water?

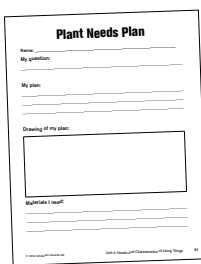
- What happens if I water my plant with salt water instead of water?
- What if I give my plant some plant food?
- What happens if I water my plant three times a day?
- What happens if I put my plant in sand instead of cotton balls?
- What if I move my plant to soil?
- What if I put my plant in a container of water?
- What happens if my plant doesn't get any light at all?
- What happens if my plant only gets light from a lamp?

Choose one question and discuss as a class how you could investigate the question. For example, to investigate what happens when plants get no light, you could place the plant under a box for several days. Discuss why it would be important to continue to water the plant throughout the investigation. (This is so that you know that any changes you see in the plant are due to lack of sunlight, not lack of water.)

Tell the class that you will maintain several plants in their cotton balls, in the sun, with the same level of watering that they have been getting. These are controls to compare the other plants against.

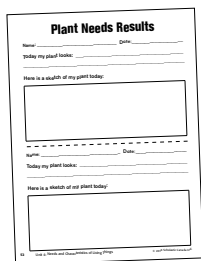
Organize the class into pairs or small groups. Each group should choose a question to investigate. (Alternatively, assign each group a question.) Ask students to make a prediction about the outcome of their investigation based on prior observations and knowledge. Groups can plan how they will carry out their inquiry and make a list of materials they will need (e.g., soil, salt water, a box). Each group should describe their plan to you and provide their list of materials. You can provide BLM *Plant Needs Plan* to help students make their plans.

Discuss with students any safety concerns associated with their plans.



The worksheet is titled "Plant Needs Plan". It includes sections for "Name", "My question", "My plan", "Drawing of my plan", and "My prediction".

Step 2: Explore and Record Your Results



The worksheet is titled "Plant Needs Results". It includes sections for "Name", "Today my plant looks:", "Here is a sketch of my plant today:", "Date", "Today my plant looks:", and "Here is a sketch of my plant today:". There is also a small icon of a folder next to the worksheet.

Students should carry out their plan for investigating their question. The investigation will need to occur over several days for the results to become evident. Students should record their observations each day on copies of BLM *Plant Needs Results* using words, sketches, and digital cameras or tablets, if available. (See also Explore More on page 50.) Students should store their notes in their Science Folders.

Step 3: Think About the Results and Make Conclusions

At the end of the time period you have designated for the investigation, have students gather in their pairs or groups to discuss their results. Prompt them to look at the question they asked at the beginning of the investigation. Ask:

- What happened to your plant over the time you observed it?
- Based on your observations, how would you answer your question?
- Was your prediction correct?

Step 4: Share What You Learned

As a class, discuss and compare results. Bring all of the plants to the front of the class and have pairs and groups take turns describing what happened to their plants during the investigation. Ask:

- What do plants need?
- What happens when plants do not get what they need?
- Is it possible for plants to get too much of what they need (e.g., water)? What happens then?

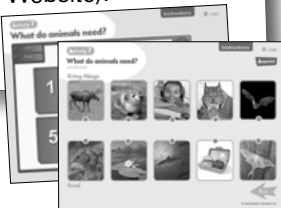


Encourage students to record any new questions they may have on the I Wonder Wall.

CONSOLIDATE

IWB Activity:

Students can use Activity 7: *What do animals need?* to match animals with their shelters on slide 1 and food on slide 2 (see the Teacher's Website).



Comparing Animal Needs

Have students create a Venn diagram to compare the needs of two living things. For example, students could compare the needs of pairs such as the following:

- a house plant and a dog
- a goldfish and a cat
- a cow and a corn plant
- a black bear and a robin
- an orca whale and a moose
- a cod and a dandelion

Focus Animal

Have students use the Curiosity Centre and the Reading Centre to research the needs of their Focus Animal. They should record what they find out in their Science Journals.

EXPLORE MORE

Animals and Their Homes

Students can begin to explore the importance of an animal's home—its habitat—by researching why specific animals need to live in certain conditions. They could research habitat for their Focus Animal, or for animals such as polar bears with disappearing habitat.

Video

Have students use a time-lapse app to create a video showing the changes in their plant over time during the Plant Needs investigation.

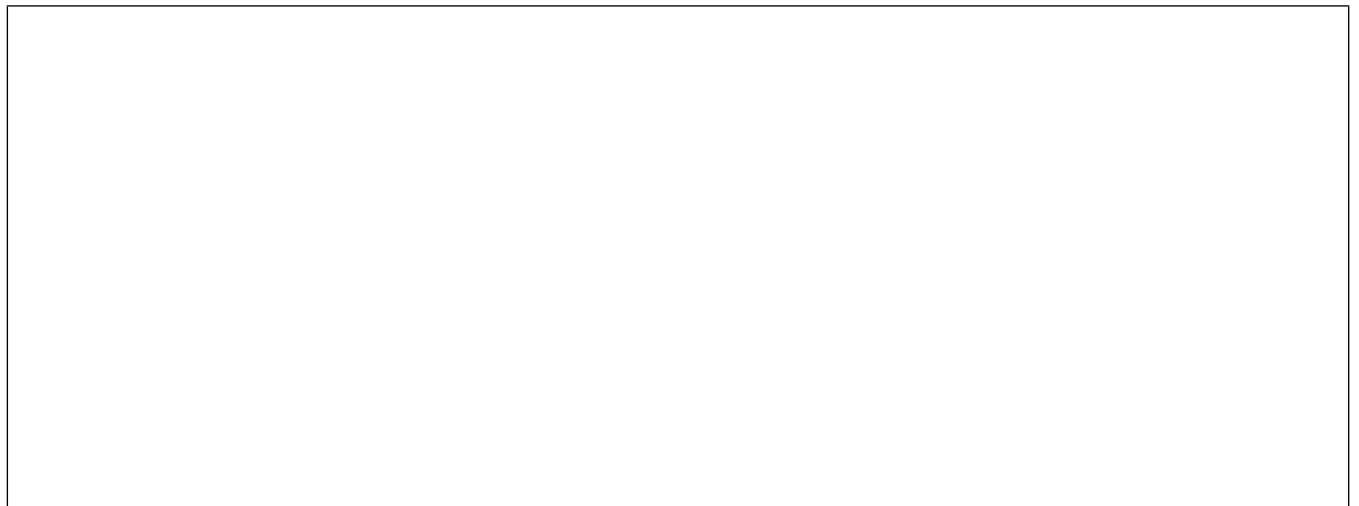
Plant Needs Plan

Name: _____

My question:

My plan:

Drawing of my plan:



Materials I need:

Plant Needs Results

Name: _____ Date: _____

Today my plant looks: _____

Here is a sketch of my plant today:



Name: _____ Date: _____

Today my plant looks: _____

Here is a sketch of my plant today:

