

# NOVA SCOTIA SCIENCE 6 TEACHER'S RESOURCE

## UNIT 4: DIVERSITY OF LIFE

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# UNIT 4: DIVERSITY OF LIFE OVERVIEW

Unit 4 is about the variety of living things and how they are adapted to the places where they live. It is also about using classification as a tool to understand the natural world.

Students will use their observation skills to investigate plants and animals and classify them according to the observable characteristics that the organisms either share or do not share with other organisms. In this unit they learn that in order to identify organisms, they must observe and catalogue what makes them similar to and different from other organisms. Students will find that by learning how organisms are sorted and grouped, they are better able to find out more information about individuals or groups of organisms. In this unit, students also see that environmental change is a natural event, and that there are consequences (positive or negative) for organisms when the environment does change.

## **Chapter 7: Classifying Living Things**

Chapter 7 explains how living things are classified. In Section 7.1 students learn that organisms are sorted by kingdom, phylum, class, order, family, genus, and species—kingdom is the broadest category, while species is the most specific. As well, students discover that all organisms have a two-part scientific name that includes both their genus and species names, and that, although several types of organisms can have the same genus name, no two types of organisms share the same species name. Students will practise using classification keys to identify organisms.

In Section 7.2 students examine the six kingdoms of living things. They discover that all archaeans and bacteria are micro-organisms. Organisms in these kingdoms do not make their own food and obtain their nutrients by decomposing other living things or once-living things. Students explore the protists and learn that some protists can make their own food through photosynthesis while others eat food or absorb food into their bodies by decomposing other organisms. Students investigate the growth of fungi.

They also learn that fungi are not plants and must obtain nutrients by absorbing them from other living things, often by decomposing the waste products of organisms or decomposing dead organisms. Students discover that plants use solar energy to make their own food by photosynthesis, while animals obtain nutrients by eating other organisms. Students also learn that the animal kingdom can be divided into two main groups: vertebrates (animals with backbones) and invertebrates (animals without backbones) and that there are seven classes of vertebrate, including three classes of fish, amphibians, reptiles, birds, and mammals.

## **Chapter 8: Living Things and Their Adaptations**

Chapter 8 focuses on the adaptations that enable living things to survive in specific habitats. In Section 8.1 students discover that adaptations are inherited characteristics and that adaptations include:

- physical adaptations: features of structure or appearance that give organisms a better chance of surviving in their surroundings. Examples are: camouflage, physical adaptations that help organisms hide from other organisms; and mimicry, a type of camouflage that allows organisms to gain protection by copying coloration and/or shape of other organisms or objects
- behavioural adaptations: habits and activities of organisms that are important for survival; hibernation and migration are examples of behavioural adaptations.

In Section 8.2 students investigate the plants and animals that are found in the four biomes (large areas with distinct climate and vegetation) in Canada and conduct a survey of the organisms found in the major biomes throughout the world. They learn the adaptations an organism has are related to the conditions of the environment in which it lives and that most of the species alive today are different from the species that lived in the past.

# Unit 4 Diversity of Life: Correlation to Nova Scotia Grade 6 Science Curriculum

	<b>NOVA SCOTIA SCIENCE 6</b>	<b>STUDENT TEXT PAGES</b>
<b>GENERAL CURRICULUM OUTCOMES</b>		
STSE: Students will develop an understanding of the nature of science and technology, of the relationships between science and technology, and of the social and environmental contexts of science and technology.	<ul style="list-style-type: none"> <li>Find Out Activity 7-E: Keeping Micro-Organisms Under Control</li> <li>Conduct an Investigation 7-F: Looking for Micro-Organisms</li> </ul>	<p>p. 216</p> <p>pp. 218–9</p>
Skills: Students will develop the skills required for scientific and technological inquiry, for solving problems, for communicating scientific ideas and results, for working collaboratively, and for making informed decisions.	<ul style="list-style-type: none"> <li>Find Out Activity 7-B: Identifying Canadian Cats</li> <li>Find Out Activity 7-D: Wanted: Bacteria That You Need</li> <li>Conduct an Investigation 7-F: Looking for Micro-Organisms</li> <li>Conduct an Investigation 7-H: Grow a Fungus Garden</li> <li>Conduct an Investigation 7-J: Classifying Arthropods</li> <li>Find Out Activity 8-B: Picky Eaters</li> <li>Problem-Solving Investigation 8-C: Camouflage Creature</li> <li>Think &amp; Link Investigation 8-D: Matching Adaptations</li> <li>Find Out Activity 8-F: Checking Out the Neighbourhood</li> </ul>	<p>p. 209</p> <p>p. 214</p> <p>p. 218–9</p> <p>p. 222–3</p> <p>p. 226–7</p> <p>p. 236</p> <p>p. 238</p> <p>p. 242</p> <p>pp. 246–7</p>
Knowledge: Students will construct knowledge and understandings of concepts in life science, physical science, and Earth and space science, and apply these understandings to interpret, integrate, and extend their knowledge.	<ul style="list-style-type: none"> <li>Starting Point Activity 7-A: What Am I?</li> <li>Find Out Activity 7-C: Create Your Own Classification Key</li> <li>Find Out Activity 7-G: Plant Survey</li> <li>Starting Point Activity 8-A: Home, Sweet Home</li> <li>Find Out Activity 8-G: Changes in Organisms over Time</li> <li>Unit 4 Project: Design a Plant for its Habitat</li> </ul>	<p>p. 203</p> <p>p. 210</p> <p>p. 220</p> <p>p. 233</p> <p>p. 251</p> <p>pp. 260–1</p>
<b>SPECIFIC CURRICULUM OUTCOMES</b>		
<p><i>The Role of a Common Classification Scheme for Living Things</i></p> <ul style="list-style-type: none"> <li>create and analyze your own chart or diagram for classifying and describe the role of a common classification system (206-1, 206-9, 300-15)</li> </ul>	<ul style="list-style-type: none"> <li>Starting Point Activity 7-A: What Am I?</li> <li>Find Out Activity 7-B: Identifying Canadian Cats</li> <li>Find Out Activity 7-C: Create Your Own Classification Key</li> </ul>	<p>p. 203</p> <p>p. 209</p> <p>p. 210</p>
<p><i>The Animal Kingdom: Vertebrates and Invertebrates</i></p> <ul style="list-style-type: none"> <li>classify animals as vertebrates or invertebrates and compare the characteristics of mammals, birds, reptiles, amphibians, and fishes (300-16, 300-17)</li> </ul>	<ul style="list-style-type: none"> <li>Find Out Activity 7-I: Animal Collage</li> <li>Find Out Activity 7-K: Guess Who?</li> </ul>	<p>p. 225</p> <p>p. 229</p>
<ul style="list-style-type: none"> <li>classify common arthropods using a variety of sources (205-8, 300-18)</li> </ul>	<ul style="list-style-type: none"> <li>Conduct an Investigation 7-J: Classifying Arthropods</li> </ul>	<p>pp. 226–7</p>
<p><i>Micro-Organisms</i></p> <ul style="list-style-type: none"> <li>identify and use appropriate tools to examine micro-organisms and describe how they meet their basic needs (204-8, 300-19, 302-12)</li> </ul>	<ul style="list-style-type: none"> <li>Find Out Activity 7-E: Keeping Micro-Organisms Under Control</li> <li>Off the Wall (slime moulds)</li> </ul>	<p>p. 216</p> <p>p. 217</p>
<ul style="list-style-type: none"> <li>provide examples of how science and technology have been used in identifying and controlling micro-organisms by different people around the world (107-3, 107-6)</li> </ul>	<ul style="list-style-type: none"> <li>Did You Know? (Antony van Leeuwenhoek and the first microscope)</li> <li>Conduct an Investigation 7-F: Looking for Micro-Organisms</li> </ul>	<p>p. 205</p> <p>pp. 218–9</p>
<p><i>Adaptations</i></p> <ul style="list-style-type: none"> <li>propose questions and gather information about the relationship among the structural features of plants and animals in their environments and identify the positive and negative impacts of humans on these resources (204-1, 108-8)</li> </ul>	<ul style="list-style-type: none"> <li>Starting Point Activity 8-A: Home, Sweet Home</li> <li>Problem-Solving Investigation 8-C: Camouflage Creature</li> <li>Think &amp; Link Investigation 8-D: Matching Adaptations</li> </ul>	<p>p. 233</p> <p>p. 238</p> <p>p. 242</p>
<ul style="list-style-type: none"> <li>classify and compare the adaptations of closely related animals living in their local habitat, and in different parts of the world, and discuss reasons for any differences (301-15, 104-5, 204-6, 206-1)</li> </ul>	<ul style="list-style-type: none"> <li>Find Out Activity 7-G: Plant Survey</li> <li>Find Out Activity 8-B: Picky Eaters</li> <li>Think &amp; Link Investigation 8-D: Matching Adaptations</li> <li>Find Out Activity 8-E: Where in the World?</li> </ul>	<p>p. 220</p> <p>p. 236</p> <p>p. 242</p> <p>p. 245</p>
<ul style="list-style-type: none"> <li>identify changes in animals over time and research and model the work of scientists (107-11, 207-4, 301-16)</li> </ul>	<ul style="list-style-type: none"> <li>Find Out Activity 8-G: Changes in Organisms over Time</li> <li>Find Out Activity 8-H: What Happens Next?</li> <li>Find Out Activity 8-I: Make a Species Profile</li> </ul>	<p>p. 251</p> <p>p. 252</p> <p>p. 253</p>

## USING ACTIVITY-BASED LEARNING TO TEACH UNIT 4: DIVERSITY OF LIFE

In this unit, students will explore how living things can be sorted or categorized into groups. They will be introduced to the formal biological classification system but will focus on animals, plants, and microorganisms. In addition to identifying characteristics among living organisms that make them similar or different, students will explain how those characteristics help organisms meet their basic needs.

Adaptations and technologies will be examined as students gather data about living things around them and living things of interest in other areas. Students will also consider what the fossil record shows them about how living things change over time.

### Assessing Prior Knowledge and Introducing the Unit

Students investigated the needs and characteristics of living things in Science 1, explored the growth and changes in animals in Science 2, and explored plant growth in Science 3. In this unit, students sort living things through an introduction to the formal classification system. The concepts developed in the habitats unit in Science 4 plus the concepts in this unit give students the foundation for Science 7, Interactions within Ecosystems.

### Exploring the Key Concepts

The key concepts in this unit include:

- classification of living things is based on observation
- like organisms are classified together
- classification of living things is a formal process
- the largest classification group for living things is kingdom; the smallest is species
- the diversity of living things is related to their local habitat and place in the world
- the fossil record is evidence that living things have changed over time

### Assessing Student Learning

Throughout Science 6, students have been developing skills to write procedures, frame questions, collect data, and classify information so that they can act as young scientists. Students are now able to design and write their own investigations. Assessment might include identifying examples of careers that use science, conducting inventories of plants found in their surroundings, classifying organisms in water using criteria they have developed themselves, comparing fossil findings, consulting with other groups around the world about organisms, or proposing questions to investigate and practical problems to solve. The assessment has many possibilities for teachers and students to use to craft the potential evaluation plans.

## IMPLEMENTATION GUIDE FOR UNIT 4 ACTIVITIES AND INVESTIGATIONS

The implementation planning chart below is intended to help you use *Nova Scotia Science 6* to cover the curriculum by highlighting the activities, investigations, and some suggested assessment options. (See the Assessment section of this Teacher's Resource for more information.) Page numbers in the student textbook are indicated in [ ].

WEEK #	ACTIVITIES [STUDENT TEXT PAGE]	ASSESSMENT OPTIONS
	<b>Unit 4 Opener</b> [200-1]	<ul style="list-style-type: none"> <li>• Getting Ready answers</li> </ul>
	<b>Chapter 7: Classifying Living Things</b> [202-231]	<ul style="list-style-type: none"> <li>• Rubric 2, Science Logbook</li> <li>• Checklist 7, Concept Map</li> <li>• Vocabulary BLMs, Science Portfolio (if using)</li> <li>• one-on-one interviews</li> <li>• Chapter Summary assessment</li> </ul>
	<i>Starting Point Activity 7-A: What Am I?</i> [203]	<ul style="list-style-type: none"> <li>• What to Do answers</li> </ul>
	Section 7.1: Grouping Living Things [204-11]	
	<i>Find Out Activity 7-B: Identifying Canadian Cats</i> [209]	<ul style="list-style-type: none"> <li>• Checklist 15, Making Observations and Inferences</li> </ul>
	<i>Find Out Activity 7-C: Create Your Own Classification Key</i> [210]	<ul style="list-style-type: none"> <li>• Rubric 3, Co-operative Group Work</li> <li>• Checklist 6, Classification Systems</li> </ul>
	Section 7.2: The Kingdoms of Life [212-30]	
	<i>Find Out Activity 7-D: Wanted: Bacteria That You Need</i> [214]	<ul style="list-style-type: none"> <li>• Checklist 5, Poster</li> </ul>
	<i>Find Out Activity 7-E: Keeping Micro-Organisms Under Control</i> [216]	<ul style="list-style-type: none"> <li>• Rubric 5, Research Project</li> <li>• Rubric 7, Multimedia Presentation</li> </ul>
	<i>Conduct an Investigation 7-F: Looking for Micro-Organisms</i> [218-9]	<ul style="list-style-type: none"> <li>• Rubric 19, Conduct an Investigation</li> </ul>
	<i>Find Out Activity 7-G: Plant Survey</i> [220]	<ul style="list-style-type: none"> <li>• Rubric 4, Scientific Drawing</li> <li>• Checklist 15, Making Observations and Inferences</li> </ul>
	<i>Conduct an Investigation 7-H: Grow a Fungus Garden</i> [222-3]	<ul style="list-style-type: none"> <li>• Rubric 19, Conduct an Investigation</li> </ul>
	<i>Find Out Activity 7-I: Animal Collage</i> [225]	<ul style="list-style-type: none"> <li>• Learning Skills Checklist 5, Poster</li> </ul>
	<i>Conduct an Investigation 7-J: Classifying Arthropods</i> [226-7]	<ul style="list-style-type: none"> <li>• Rubric 3, Co-operative Group Work</li> <li>• Rubric 4, Scientific Drawing</li> <li>• Rubric 19, Conduct an Investigation</li> </ul>
	<i>Find Out Activity 7-K: Guess Who?</i> [229]	<ul style="list-style-type: none"> <li>• Review student cards/work, answers to “What Did You Find Out” question.</li> </ul>
	<b>Chapter 8: Living Things and Their Adaptations</b> [232-55]	<ul style="list-style-type: none"> <li>• Rubric 2, Science Logbook</li> <li>• Checklist 7, Concept Map</li> <li>• Vocabulary BLMs, Science Portfolio (if using)</li> <li>• one-on-one interviews</li> <li>• Chapter Summary assessment</li> </ul>
	<i>Starting Point Activity 8-A: Home, Sweet Home</i> [233]	<ul style="list-style-type: none"> <li>• What Did You Find Out? answers [233]</li> </ul>
	Section 8.1: Adaptations [234-243]	
	<i>Find Out Activity 8-B: Picky Eaters</i> [236]	<ul style="list-style-type: none"> <li>• What Did You Find Out? answers [236]</li> </ul>
	<i>Problem-Solving Investigation 8-C: Camouflage Creature</i> [238]	<ul style="list-style-type: none"> <li>• Rubric 8, Developing Models</li> </ul>
	<i>Think &amp; Link Investigation 8-D: Matching Adaptations</i> [242]	<ul style="list-style-type: none"> <li>• Conclude and Apply question 3 answer [242]</li> <li>• applicable checklist</li> </ul>
	Section 8.2: Adaptations and Change [244-54]	
	<i>Find Out Activity 8-E: Where in the World?</i> [245]	<ul style="list-style-type: none"> <li>• Rubric 14, Predicting</li> </ul>
	<i>Find Out Activity 8-F: Checking Out the Neighbourhood</i> [246-7]	<ul style="list-style-type: none"> <li>• Review students' field notes, answers to “What Did You Find Out?” questions</li> <li>• Rubric 3, Co-operative Group Work</li> </ul>
	<i>Find Out Activity 8-G: Changes in Organisms over Time</i> [251]	<ul style="list-style-type: none"> <li>• What Did You Find Out? answers [251]</li> </ul>
	<i>Find Out Activity 8-H: What Happens Next?</i> [252]	<ul style="list-style-type: none"> <li>• What Did You Find Out? answers [252]</li> <li>• Rubric 14, Predicting</li> </ul>
	<i>Find Out Activity 8-I: Make a Species Profile</i> [253]	<ul style="list-style-type: none"> <li>• Checklist 3, Oral Presentation</li> <li>• Checklist 4, Computer Slide Show Presentation</li> <li>• Checklist 5, Poster</li> </ul>
	<b>Conversation with an Elder: Sheldon Googoo</b> [256-7]	<ul style="list-style-type: none"> <li>• Checklist 11, Project Self-Assessment</li> <li>• adapt Rubric 6, Communication</li> </ul>
	<b>Conversation with Elders: Patrick and Eleanor Johnson</b> [258-9]	<ul style="list-style-type: none"> <li>• adapt Rubric 6, Communication</li> </ul>
	<b>Unit 4 Project: Design a Plant for its Habitat</b> [260-1]	<ul style="list-style-type: none"> <li>• adapt Rubric 6, Communication</li> <li>• Rubric 3, Co-operative Group Work</li> <li>• Rubric 8, Developing Models</li> </ul>

## MULTIPLE INTELLIGENCES CORRELATIONS FOR UNIT 4 ACTIVITIES AND INVESTIGATIONS

The table below shows the multiple intelligences engaged in the activities and investigations for this unit, in order to help you plan for differentiated instruction in your science lessons. For more information concerning differentiated instruction and multiple intelligences see the Introduction and Implementation section in this Teacher's Resource.

The multiple intelligence codes are as follows:  
 VL = Verbal-Linguistic; LM = Logical-Mathematical;  
 N = Naturalist; VS = Visual-Spatial;  
 BK = Body-Kinesthetic; IE = Interpersonal;  
 IA = Intra-Personal; MR = Musical-Rhythmic;  
 E = Existential.

MULTIPLE INTELLIGENCES:	VL	LM	N	VS	BK	IE	IA	MR	E
<b>UNIT 4: DIVERSITY OF LIFE [page #]</b>									
<b>Chapter 7: Classifying Living Things [202–31]</b>									
Starting Point Activity 7-A: What Am I? [203]	■		●	●		■			
Find Out Activity 7-B: Identifying Canadian Cats [209]	■	●		■			●		
Find Out Activity 7-C: Create Your Own Classification Key [210]	●	■		■		●			
Find Out Activity 7-D: Wanted: Bacteria That You Need [214]	●			■			●		●
Find Out Activity 7-E: Keeping Micro-Organisms Under Control [216]	■	■					●		●
Conduct an Investigation 7-F: Looking for Micro-Organisms [218-9]	●		●	■	■	●			
Find Out Activity 7-G: Plant Survey [220]	●		■	■			●		
Conduct an Investigation 7-H: Grow a Fungus Garden [222-3]	●			■	■		●		
Find Out Activity 7-I: Animal Collage [225]	●	■	●	■			●		
Conduct an Investigation 7-J: Classifying Arthropods [226-7]	●	●	■	■	●		●		
Find Out Activity 7-K: Guess Who? [229]	■		●	●		■			
<b>Chapter 8: Living Things and Their Adaptations [232–255]</b>									
Starting Point Activity 8-A: Home, Sweet Home [233]	■	■	●	●	●	●			
Find Out Activity 8-B: Picky Eaters [236]	■			■	■		●		
Problem-Solving Investigation 8-C: Camouflage Creature [238]				■	■	●			
Think & Link Investigation 8-D: Matching Adaptations [242]	■	■		●			●		
Find Out Activity 8-E: Where in the World? [245]	■	●					●		●
Find Out Activity 8-F: Checking Out the Neighbourhood [246-7]	●		■	■	■		●		
Find Out Activity 8-G: Changes in Organisms over Time [251]	■	●		■			●		■
Find Out Activity 8-H: What Happens Next? [252]	■			■			●		●
Find Out Activity 8-I: Make a Species Profile [253]	■			■			●		
Conversation with an Elder: Sheldon Googoo [256-7]	■		●				●		●
Conversation with Elders: Patrick and Eleanor Johnson [258-9]	■						●		●
<b>Unit 4 Project: Design a Plant for its Habitat [260-1]</b>	●	■			■	■			

■ indicates the primary intelligences involved in the activity or investigation

● indicates the secondary intelligences. For instance, for a hands-on experiment, students use mostly body-kinesthetic (the tactile skills) and visual-spatial (for observation) intelligence. However, if the activity includes a follow-up discussion or a written recording, there is a verbal-linguistic component. If the activity is done in groups, there is an interpersonal component.

# Advance Planning Chart for Activities and Investigations for Unit 4: Diversity of Life

ACTIVITY/ INVESTIGATION (student textbook page number)	ADVANCE PREPARATION	MATERIALS	SUGGESTED TIME	OTHER CONSIDERATIONS
<b>CHAPTER 7: CLASSIFYING LIVING THINGS</b>				
Starting Point Activity 7-A: What Am I? (p. 203)	<ul style="list-style-type: none"> <li>2 weeks before: prepare class set of pictures of living things</li> </ul>	<ul style="list-style-type: none"> <li>scissors</li> <li>index cards</li> <li>pictures of living things</li> </ul>	<ul style="list-style-type: none"> <li>30 min</li> </ul>	<ul style="list-style-type: none"> <li>Laminate a class set of cards that can be re-used.</li> </ul>
Find Out Activity 7-B: Identifying Canadian Cats (p. 209)	<ul style="list-style-type: none"> <li>1 day before: locate larger images of the <i>Puma concolor</i> and the <i>Lynx canadensis</i> (optional)</li> </ul>	<ul style="list-style-type: none"> <li>None</li> </ul>	<ul style="list-style-type: none"> <li>10 min</li> </ul>	<ul style="list-style-type: none"> <li>None</li> </ul>
Find Out Activity 7-C: Create Your Own Classification Key (p. 210)	<ul style="list-style-type: none"> <li>1 to 2 weeks before: collect tree leaves/needles/cones or find reference pictures</li> <li>1 day before: make an overhead transparency of BLM 7.3, Create Your Own Classification Key – photocopy Assessment Rubric 3, Co-operative Group Work (optional)</li> </ul>	<ul style="list-style-type: none"> <li>collection of tree leaves, needles and cones or photographs of coniferous and deciduous trees found in Nova Scotia</li> <li>large poster paper or paper used at community banquets to cover tables</li> <li>ruler</li> </ul>	<ul style="list-style-type: none"> <li>40-60 min</li> </ul>	<ul style="list-style-type: none"> <li>Make sure that you are not bringing in any poisonous plant material.</li> <li>Fir or pine needles may trigger contact allergies.</li> </ul>
Find Out Activity 7-D: Wanted: Bacteria That You Need (p. 214)	<ul style="list-style-type: none"> <li>2 to 3 weeks before: book library</li> <li>1 to 2 days before: students choose their research topic – photocopy Assessment Checklist 11, Poster (optional)</li> </ul>	<ul style="list-style-type: none"> <li>print and digital resources</li> <li>poster-size paper</li> <li>art supplies</li> </ul>	<ul style="list-style-type: none"> <li>20 min for research</li> <li>30 min for creating the poster</li> </ul>	<ul style="list-style-type: none"> <li>You may wish to assign half of your class Find Out Activity 7-E while the other half of the class works on this activity.</li> </ul>
Find Out Activity 7-E: Keeping Micro- Organisms Under Control (p. 216)	<ul style="list-style-type: none"> <li>3 to 4 weeks before: book the library and print resources – contact parents/community members for class presentation</li> <li>1 to 2 days before: photocopy Checklist 11, Poster or Rubric 7, Multimedia Presentation (optional)</li> <li>photocopy BLM 7.5, Food Preservation Techniques</li> </ul>	<ul style="list-style-type: none"> <li>Internet or print resources</li> <li>poster supplies (optional)</li> </ul>	<ul style="list-style-type: none"> <li>30 minutes to complete research</li> <li>at least 30 min to develop presentations</li> </ul>	<ul style="list-style-type: none"> <li>You may wish to assign half of your class Find Out Activity 7-D while the other half of the class works on this activity.</li> </ul>
Conduct an Investigation 7-F: Looking for Micro-Organisms (pp. 218–9)	<ul style="list-style-type: none"> <li>3 to 4 weeks before: order prepared slides (optional)</li> <li>2 weeks before: gather materials for the hay infusion</li> <li>Option: 1 week before: photocopy and distribute BLM SSR-3, Using a Microscope – have students complete BLM prior to starting investigation</li> <li>1 week before: prepare the hay infusion (if using)</li> </ul>	<ul style="list-style-type: none"> <li>microscopes</li> <li>prepared slides of pond water micro-organisms (optional)</li> <li>microscope slides</li> <li>microscope cover slips</li> <li>large jars</li> <li>pond water</li> <li>grass or hay and active yeast</li> <li>medicine dropper</li> <li>plastic drinking straws</li> <li>pond life identification guide</li> </ul>	<ul style="list-style-type: none"> <li>20 min to make hay infusion</li> <li>5 minutes per day for the first week</li> <li>30 minutes to complete procedure steps 3 and 4</li> <li>30 minutes to complete procedure steps 5 to 8</li> </ul>	<ul style="list-style-type: none"> <li>Find out if any students are allergic to mould, algae, or other living things.</li> </ul>
Find Out Activity 7-G: Plant Survey (p. 220)	<ul style="list-style-type: none"> <li>3 to 4 weeks before: obtain relevant field guides</li> <li>2 to 3 weeks before: collect plant samples</li> <li>1 to 2 days before: photocopy appropriate field guide information for the plants</li> </ul>	<ul style="list-style-type: none"> <li>magnifying glass</li> <li>pencil</li> <li>ruler</li> <li>paper</li> <li>plant samples</li> <li>plant identification field guides</li> <li>digital camera(s)</li> </ul>	<ul style="list-style-type: none"> <li>60 min</li> </ul>	<ul style="list-style-type: none"> <li>Check for allergies before bringing specific plants into your classroom.</li> </ul>

ACTIVITY/ INVESTIGATION (student textbook page number)	ADVANCE PREPARATION	MATERIALS	SUGGESTED TIME	OTHER CONSIDERATIONS
Conduct an Investigation 7-H: Grow a Fungus Garden (pp. 222–3)	<ul style="list-style-type: none"> <li>• 1 day before: gather all materials; photocopy BLM 7.6, Grow a Fungus Garden</li> </ul>	<ul style="list-style-type: none"> <li>• spray bottle filled with water</li> <li>• permanent marker</li> <li>• 1 slice of bread</li> <li>• plastic knife</li> <li>• 4 new, resealable plastic bags</li> <li>• duct tape</li> </ul>	<ul style="list-style-type: none"> <li>• 20 min to prepare samples and table for recording observations</li> <li>• 10 min to record observations each day</li> <li>• 20 min for questions 1–7</li> </ul>	<ul style="list-style-type: none"> <li>• Step 2 should be supervised; gloves must be worn.</li> <li>• Excuse any students with allergies to mould.</li> <li>• Keep the plastic bags sealed, with the tape.</li> <li>• Grow cultures only at room temperature.</li> <li>• Dispose of materials according to school policy.</li> <li>• Hands must be washed with soap and warm water after each step.</li> <li>• Clean up any spills or dispose of the samples using proper procedures.</li> </ul>
Find Out Activity 7-I: Animal Collage (p. 225)	<ul style="list-style-type: none"> <li>• 1 month before: collect old nature and outdoor magazines</li> </ul>	<ul style="list-style-type: none"> <li>• scissors</li> <li>• old nature and outdoor magazines</li> <li>• glue</li> <li>• poster paper</li> <li>• pencils, pens, markers</li> </ul>	<ul style="list-style-type: none"> <li>• 45 min</li> </ul>	<ul style="list-style-type: none"> <li>• None</li> </ul>
Conduct an Investigation 7-J: Classifying Arthropods (pp. 226–7)	<ul style="list-style-type: none"> <li>• 2 or 3 weeks before: obtain permission to take students out of the classroom; get a set of field guides for arthropods in your area</li> <li>• 1 week before: ask parents to indicate if students are allergic to bees, wasps, insect bites, or spider bites</li> <li>• 1 day before: review the procedures</li> </ul>	<ul style="list-style-type: none"> <li>• clipboards</li> <li>• hand-held magnifiers</li> <li>• computers with Internet access</li> <li>• digital cameras</li> <li>• pictures of arthropods or field guides</li> </ul>	<ul style="list-style-type: none"> <li>• 60 min</li> </ul>	<ul style="list-style-type: none"> <li>• This activity is designed for spring or fall when the arthropods are most active.</li> <li>• Remind students not to handle any organisms with their bare hands.</li> <li>• Supervise or excuse students with allergies to bee or wasp stings, insect bites, or spider bites.</li> <li>• Require proper clothing, sun block, and insect repellent as needed. Take precautions against ticks.</li> </ul>
Find Out Activity 7-K: Guess Who? (p. 229)	<ul style="list-style-type: none"> <li>• 1 month before: collect old outdoor and nature magazines</li> </ul>	<ul style="list-style-type: none"> <li>• scissors</li> <li>• outdoor and nature magazines</li> <li>• glue</li> <li>• 5 index cards</li> </ul>	<ul style="list-style-type: none"> <li>• 60–90 minutes</li> </ul>	<ul style="list-style-type: none"> <li>• None</li> </ul>
<b>CHAPTER 8: LIVING THINGS AND THEIR ADAPTATIONS</b>				
Starting Point Activity 8-A: Home, Sweet Home (p. 233)	<ul style="list-style-type: none"> <li>• 3 to 4 weeks before: locate video or digital resources</li> </ul>	<ul style="list-style-type: none"> <li>• chart paper and markers</li> </ul>	<ul style="list-style-type: none"> <li>• 40–60 min</li> </ul>	<ul style="list-style-type: none"> <li>• Assign specific habitat to each student.</li> <li>• Use a timer to limit Internet time.</li> </ul>
Find Out Activity 8-B: Picky Eaters (p. 236)	<ul style="list-style-type: none"> <li>• 2 to 3 days before: gather materials</li> <li>• 1 day before: photocopy BLM 8-3, Picky Eaters</li> </ul>	<ul style="list-style-type: none"> <li>• tongs</li> <li>• clothespins</li> <li>• tweezers</li> <li>• scissors</li> <li>• gummy worms</li> <li>• jelly bean</li> <li>• chocolate chip</li> <li>• sunflower seeds (in shell)</li> </ul>	<ul style="list-style-type: none"> <li>• 40 min</li> </ul>	<ul style="list-style-type: none"> <li>• Remind students they must never eat anything in the science lab.</li> <li>• Ask about food allergies.</li> <li>• Remind students that all tools should be handled with care.</li> </ul>
Problem-Solving Investigation 8-C: Camouflage Creature (p. 238)	<ul style="list-style-type: none"> <li>• 1 week before: discuss project and have students gather materials</li> </ul>	<ul style="list-style-type: none"> <li>• scissors</li> <li>• containers such as milk jugs, food containers, and boxes</li> <li>• small items such as pins, buttons, string, pipe cleaners, and craft sticks</li> <li>• art supplies</li> </ul>	<ul style="list-style-type: none"> <li>• 40–60 min</li> </ul>	<ul style="list-style-type: none"> <li>• Allow time 1 week prior to the activity for partners to discuss and plan.</li> <li>• Set criteria related to the size (optional).</li> </ul>



ACTIVITY/ INVESTIGATION (student textbook page number)	ADVANCE PREPARATION	MATERIALS	SUGGESTED TIME	OTHER CONSIDERATIONS
Think & Link Investigation 8-D: Matching Adaptations (p. 242)	<ul style="list-style-type: none"> <li>• 2 to 3 weeks before: book library</li> <li>• 1 day before: photocopy Process Skills Rubric 8, Developing Models (optional)</li> </ul>	<ul style="list-style-type: none"> <li>• None</li> </ul>	<ul style="list-style-type: none"> <li>• 15 min to complete main activity</li> <li>• 90 min to complete question 3</li> </ul>	<ul style="list-style-type: none"> <li>• Conclude and Apply question 3 could take more than one class to complete.</li> </ul>
Find Out Activity 8-E: Where in the World? (p. 245)	<ul style="list-style-type: none"> <li>• 2 to 3 weeks before: book library</li> <li>• 1 week before: bookmark web sites</li> <li>• 1 week before: prepare BLM 8.4, Canadian Biomes as an overhead</li> <li>• photocopy Process Skills Rubric 14, Predicting Models (optional)</li> </ul>	<ul style="list-style-type: none"> <li>• digital or print reference materials</li> <li>• paper/pencils</li> </ul>	<ul style="list-style-type: none"> <li>• 30–45 min</li> </ul>	<ul style="list-style-type: none"> <li>• None</li> </ul>
Find Out Activity 8-F: Checking Out the Neighbourhood (pp. 246–7)	<ul style="list-style-type: none"> <li>• 4 weeks before: order soil thermometers (optional)</li> <li>• 1 week before: gather the materials</li> </ul>	<ul style="list-style-type: none"> <li>• soil thermometers</li> <li>• 4 metre sticks per group</li> <li>• ruler</li> <li>• plastic container with holes punched into the lid</li> <li>• hand lens</li> <li>• clipboard</li> <li>• trowel/sweep net</li> <li>• field guides (optional)</li> <li>• plastic garbage bags</li> </ul>	<ul style="list-style-type: none"> <li>• 60 min for investigation</li> <li>• 30 min to complete What Did You Find Out? questions</li> </ul>	<ul style="list-style-type: none"> <li>• Container is optional.</li> <li>• Clear area of hazards.</li> <li>• Remind students of cautions around water.</li> <li>• Find out about student allergies; take precautions.</li> <li>• Do not use regular thermometers to take soil temperature.</li> </ul>
Find Out Activity 8-G: Changes in Organisms over Time (p. 251)	<ul style="list-style-type: none"> <li>• 1 day before: photocopy or prepare overhead BLM 8.6, Changes in Organisms over Time</li> </ul>	<ul style="list-style-type: none"> <li>• None</li> </ul>	<ul style="list-style-type: none"> <li>• 30 min</li> </ul>	<ul style="list-style-type: none"> <li>• None</li> </ul>
Find Out Activity 8-H: What Happens Next? (p. 252)	<ul style="list-style-type: none"> <li>• 1 day before: take students to view an undisturbed area (abandoned parking lot, rail line, farm)</li> </ul>	<ul style="list-style-type: none"> <li>• paper</li> <li>• pencils, crayon, markers</li> <li>• ruler or straight edge</li> </ul>	<ul style="list-style-type: none"> <li>• 30 min for drawing</li> <li>• 30 min for presentations/sharing</li> </ul>	<ul style="list-style-type: none"> <li>• Have digital photos available if outdoor visit is not an option.</li> </ul>
Find Out Activity 8-I: Make a Species Profile (p. 253)	<ul style="list-style-type: none"> <li>• 3 to 4 weeks before: book library</li> <li>• 1 day before: photocopy Process Skills Rubric 5, Research Project (optional)</li> </ul>	<ul style="list-style-type: none"> <li>• print and/or digital resources</li> <li>• poster paper, multimedia enabled computers as necessary</li> </ul>	<ul style="list-style-type: none"> <li>• 60 min for research</li> <li>• 60 min to create presentation</li> <li>• 60 min for presentations</li> </ul>	<ul style="list-style-type: none"> <li>• Work with the librarian, art teacher, language arts teacher, and/or computer teacher to make this an interdisciplinary activity.</li> </ul>
Conversation with an Elder: Sheldon Googoo: Exploring Further (pp. 256–7)	<ul style="list-style-type: none"> <li>• 1 week before download and print out the Volunteer Primer from the Fish Friends web site</li> </ul>	<ul style="list-style-type: none"> <li>• as appropriate</li> </ul>	<ul style="list-style-type: none"> <li>• 60 min for research</li> <li>• 60 min to create a proposal</li> <li>• 60 min to present the proposal</li> </ul>	<ul style="list-style-type: none"> <li>• None</li> </ul>
Conversation with Elders: Patrick and Eleanor Johnson: Exploring Further (pp. 258–9)	<ul style="list-style-type: none"> <li>• 2 to 3 weeks before: book computer lab</li> </ul>	<ul style="list-style-type: none"> <li>• None</li> </ul>	<ul style="list-style-type: none"> <li>• 30 min for research</li> <li>• 30 min for presentations</li> </ul>	<ul style="list-style-type: none"> <li>• Invite volunteer agencies in your community to discuss their programs.</li> </ul>
Unit 4 Project: Design a Plant for its Habitat (pp. 260–261)	<ul style="list-style-type: none"> <li>• 1 week before: organize the supplies</li> <li>• 1 week before: photocopy Learning Skills Checklist 11, Project Self Assessment and photocopy Learning Skills Checklist 12, Project Group Assessment</li> </ul>	<ul style="list-style-type: none"> <li>• art and other supplies as required</li> </ul>	<ul style="list-style-type: none"> <li>• 90 min to plan</li> <li>• 90 min to construct</li> <li>• 60 min to present</li> </ul>	<ul style="list-style-type: none"> <li>• None</li> </ul>