

Specialists vs Generalists

Grade 4 – Science and Technology



Lesson Details

Grade Level:	4	Curriculum Links:	Science and Technology, Languages	Time Needed:	30 minutes
Learning Goal	To understand how characteristics relate to function, and use this knowledge to understand the difference between specialists and generalists.				
Success Criteria	By the end of this lesson, students will be able to identify a specialist and a generalist. Students will also know the different parts of a turtle.				
Specific Expectations	<p><i>Science and Technology – Understanding Life Systems: Habitats and Communities</i></p> <ul style="list-style-type: none"> Explain why changes in the environment have a greater impact on specialized species than on generalized species; Describe structural adaptations that allow plants and animals to survive in specific habitats. <p><i>Languages – Reading: Reading for Meaning</i></p> <ul style="list-style-type: none"> Make inferences about texts using stated and implied ideas from the text as evidence. 				
Materials Needed	Worksheet (attached), Pencil.				

Lesson Description

Overview	Students will learn about the general characteristics of turtles and the difference between specialists and generalists with examples.
Activity	<ol style="list-style-type: none"> 1. Start by asking the students “what are the different characteristics of a turtle?”. 2. Follow up by asking “what is the difference between a specialist and a generalist species?”. 3. Discuss why specialists are more affected by changes in the environment. 4. Next, hand out the attached worksheet and have the students independently complete it. 5. Optional: take up the worksheet as a class once complete.
Background Information	<p>The 8 different turtle species that are native to Ontario share similar characteristics, but the size of these body parts varies depending on the species use for it. For example, the Painted Turtle has a large plastron, allowing them to pull their arms, legs, and head into their shell when scared. But the Snapping Turtle has a small plastron which does not allow for them to pull their limbs in to hide – instead the snapping turtles ‘snaps’ to protect itself.</p> <p>The top shell of a turtle is called a carapace. The underside of a turtle is called a plastron. Many turtles have distinct carapace shapes (high domed like the Blanding’s Turtle) or markings (like spots on the Spotted Turtle) that can be used to identify them. The triangular (or geometric) sections on the carapace are known as scutes. Marginal scutes are found around the carapace and ridges are the nodes (or connections) between them.</p> <p>Specialist species require very unique resources. Often times, these species have a limited diet, or require a specific habitat in order to survive. Generalist species are the Opposite. They can live in a variety of environments and eat a varied diet. Specialist</p>

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	species have a harder time finding food and a home so they are more affected in nature.
Blacklist Masters	<ul style="list-style-type: none"> Worksheet (attached) Video Link(s): Ontario Turtle Identification and Wetlands and Turtles in Ontario For more information, please visit https://www.turtleguardians.com/sample-page/id-turtles/
Place-Based Learning	With this knowledge, students will make connections to the adaptations that species in their community make in order to survive.
Inquiry-Based Learning	<p>Using Guided Inquiry, the students will work independently to complete the workshop and learn about the difference between specialists and generalists.</p> <p>Ask the students:</p> <ul style="list-style-type: none"> What body parts on a turtle help it to live within its environment? (E.g. Why does a turtle have a shell? What's the purpose of it?) What's the difference between a specialist and a generalist?
Turtle Stories	Can you think of other Ontario species that are specialists or generalists? Where do they live? Are there any in your community? How can we help them? Students are encouraged to share their experiences, pictures, and worksheets on the Turtle Stories website, found here: https://www.turtlestories.ca/
Turtle Guardian Program Links	In Level 1 (Ontario Turtle Identification) of the Turtle Guardian Program , students will learn how to identify all 8 species of Ontario's turtles and learn more information about them. For more information, please visit https://www.turtleguardians.com/what-is-a-turtle-guardian/

My Notes



Specialists Vs Generalists


Match the Characteristics with the Purpose:

Extra Eyelid	Like a rudder on a boat, helps them to steer when swimming
Long Tail	For swimming fast
Hard Shell	Helps them to see underwater, like built in goggles
Webbed Feet	Protection

Turtles hibernate at the bottom of lakes and large wetlands in the winter. They bury themselves in the mud to keep warm. How do they breathe under the water all winter? The answer below may surprise you!

Word Bank:

Breathe Walk Hibernate Sleep Live Bury



We breathe through our butts!
Turtles have special blood vessels
that allow us to take oxygen out of
the water.

Label the Parts of a Turtle:



Carapace

Scute



Tail



Head



Plastron

Foot

Word Bank:

Head

Teeth

Foot

Hair

Plastron

Spine

Carapace

Tail

Stomach

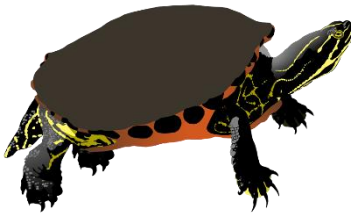
Scute

Specialists are picky. They are found in only one kind of habitat. They often have a specific diet too.

Generalists can live in a variety of habitats. They often eat more than one thing.

Let's Learn About 2 Different Species of Turtles:

Northern Map Turtles are found in large lakes and rivers with a healthy mollusk population. Mollusks include snails and mussels. The Map Turtle has a powerful jaw, and a ridge lining their mouth made of keratin (our fingernails are also made of keratin). This characteristic allows them to eat mollusks. Map Turtles have large webbed feet that make them strong swimmers. They can be identified by the yellow markings on their bodies. The design on their shells looks like contour lines on a map.



Painted Turtles are found in lakes, rivers, ponds and wetlands. They have yellow and red markings on their face and legs. They will eat algae, insects, fish, frogs, dead matter and plants. They have a dark shiny looking shell and are often seen basking (laying in the sun) on logs and rocks.

Question 1. Which turtle do you think is the generalist? Why?

The painted turtle is the generalist because it can live in a variety of habitats and has a more general diet.

Question 2. Which turtle do you think would be affected more by change to the environment? Why?

The specialist would because it would take one small change for them to disappear. If mollusks disappeared in the lake or river, so would the Map Turtles. The Painted Turtles would be able to better adapt to changes because they can eat more than one thing and live in many habitats.





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