



Science Unit: Exploring Biodiversity Like a Scientist

Lesson # 6: Animal Adaptations

Lesson Summary:

In this lesson, students will start to think more deeply about why animals look the way they do. They will brainstorm species we might expect to see on the upcoming forest field trip.

Grade level: Presented to grade K-2; appropriate for grades K – 4 with age appropriate modifications

Duration of lesson: 45-60 minutes

School Year: 2015/2016

Developed for: Collingwood Neighborhood School, Vancouver School District

Developed by: Carla Crossman (scientist); Mily Phan and Nadine Kinna (teachers)

Notes:

Objective

1. Students continue to think about animal adaptations.

Background Information

At a young age, children are sometimes better at thinking about adaptations because they are open to using their imaginations. For younger grade, such as this lesson K-2, the theme will be based on identifying adaptations and not the mechanisms behind them.

Rudyard Kipling wrote the Just-So stories talking about: how the leopard got its spots, or how the giraffe got its long neck. These stories are great at capturing the imagination, especially for students a little bit older, but they are based on Lamarckian ideas of evolution. Lamarck thought evolution happened at the level of the individual – ie. Giraffes had to stretch their necks to reach leaves at the top of the trees, that they kept stretching and stretching and they got longer.

The ideas are very similar to how evolution works and how adaptations arise, but the mechanism is completely different. Evolution by natural selection was Darwin's theory. The idea behind this theory says that beneficial traits (or those that increase health, survivorship and/or fertility) are favoured because more individuals possessing these traits survive (or they reproduce at a higher rate) and individuals that don't possess these traits might not survive.

Vocabulary

Word	Brief definition
Adaptation	The process by which a species becomes better suited to this environment.
Habitat	A place where an organism or a community of organisms live.



Lesson Detail

Introduction

1. Explain that our next field trip is to the forest.
2. Brainstorm plants and animals that we might see in a natural forest habitat in Vancouver (make sure some birds make the list!)

Activity 1: Birds Beaks!

Purpose of Activity:

To start students thinking about structure and function using bird beaks.

Methods and Instructions:

1. Explain that different types of birds may catch and eat *very* different types of food. For example they might:
 - Drink nectar from long, tube-shaped flowers
 - Tear apart a large salmon as they hold it in their sharp talons
 - Use their dagger-like beak to impale a large fish swimming by
 - Scoop food from the water
 - Peck at small insects and spiders on the ground
 - Drop clams and mussels from the air and then swoop down to eat them
 - Hammer at rotten trees and pick at the insects living inside
 - Hammer at living trees and drink the sap running under the bark
2. Ask students to think about what beak shapes would help birds catch and eat the food above (optional: pass around a variety of kitchen/household utensils to illustrate different beak types (turkey baster, nut cracker, strainer, tweezers, small hammers...))
3. Show students pictures of a variety of bird beaks. Ask them to **make a prediction** about what that bird might eat. For example, show pictures of:
 - Hummingbird (Drink nectar from long, tube-shaped flowers)
 - Eagle (Tear apart a large salmon as they hold it in their sharp talons)
 - Heron (Use their dagger-like beak to impale a large fish swimming by)
 - Duck (Scoop and strain food from the water)
 - Chickadee (Peck at small insects and spiders)
 - Crow (Drop clams and mussels from the air and then swoop down to eat them)
 - Woodpecker (Hammer at rotten trees and pick at the insects living inside)
 - Sap sucker (Hammer at living trees and drink the sap running under the bark)
4. Explain that after scientists ask a question (e.g., what does this bird eat?), they might make a prediction (e.g., this bird might eat nectar.) Ask students how a scientist could “find out more” information about what a bird eats (**gather evidence** to support their predictions).

Activity 2: Forest Animal Adaptations

1. Ask students to study and colour the drawings of forest animals below.
2. Discuss:
 - a. What might this animal eat?
 - b. How might this animal protect itself?



SCIENTIST IN RESIDENCE PROGRAM™

References

Lamarck vs Darwin. http://necsi.edu/projects/evolution/lamarck/intro./lamarck_intro.html

Different types of adaptations. <http://www.bbc.co.uk/nature/adaptations>

Schematic about Natural Selection. http://evolution.berkeley.edu/evolibrary/article/evo_25