

INSPIRE GK12 Lesson Plan



Lesson Title	Ecology: Adaptations
Length of Lesson	Two Class Periods – 50 minutes each
Created By	Deb Pounders
Subject	General Science
Grade Level	8 th grade
State Standards	8 th : 1 b, d (Inquiry); 3 a (Life Science)
DOK Level	DOK 3
DOK Application	Draw Conclusions, Develop Logical Argument, Compare. Investigate, Differentiate
National Standards	5-8: A (Inquiry); C (Life Science)
Graduate Research Element	Not applicable

Student Learning Goal:

MS 8th Grade:

(Inquiry)1 (b) Distinguish between qualitative and quantitative observations and make inferences based on observations (d) Analyze evidence that is used to form explanations and draw conclusions; (Life Science) 3 (a) Analyze how adaptations to a particular environment can increase an organism's survival and reproduction and relate organisms and their ecological niches to evolutionary change and extinction.

National Science Education Standards of Content 5-8:

(Inquiry - A) Think critically and logically to make the relationships between evidence and explanations; Develop descriptions, explanations, predictions, and models using evidence; Recognize and analyze alternative explanations and predictions; (Life Science - C) Diversity and adaptations of organisms.

Day One – In the Classroom

Materials Needed (supplies, hand-outs, resources):

PowerPoint file (INSPIRE_Pounders_02_22_11_PP); Computer; Projector; Access to brainpop.com

Lesson Performance Task/Assessment:

The PowerPoint will introduce students to types of adaptations. Students will copy definitions and view examples. Led by instructor questioning, students will identify other examples of each type of adaptation they are familiar with during a “pair and share” discussion. The students will then create the data table shown in the PowerPoint to identify, classify and explain the benefits of adaptations of each of the 15 photographed organisms. With instructor guidance, the students will complete the first five as a class,



and then the last ten as an individual assessment. Lesson presentation will end with the brainpop video “Natural Selection.” (See “Teacher Notes”).

Lesson Relevance to Performance Task and Students:

This lesson will introduce students to the types of adaptations. Students will recognize the importance of adaptations to the long-term survival of individual organisms and species in different environments.

Anticipatory Set/Capture Interest:

Before the PowerPoint, the instructor will ask the students a series of questions:

- Can a polar bear survive in the desert? Why or why not?
- Can a scorpion survive in the arctic? Why or why not?
- Are organisms born with survival traits or are they learned?

This should focus students’ attention on the concept that organisms are suited to a particular environment and introduce the idea that adaptations are not just body parts.

Guided Practice:

The instructor will lead students through the PowerPoint and asked focused questions along the way. The first five photos that accompany the data table will be completed with instructor guidance.

Independent Practice:

Students will pick a partner seated next to them and discuss plant or animal adaptations they are already familiar with for 3-5 minutes.

Students will complete the last 10 photos with the data table independently.

Remediation and/or Enrichment:

Remediation- Individual IEP; the PowerPoint will be made available to resource teacher;
Enrichment - Have students photograph organisms in their own area and identify various adaptations.

Check(s) for Understanding:

The instructor should observe students during the guided section of the lesson to check for understanding. The instructor may also observe the students’ notes to check for completion before the class is dismissed. The data table may be collected and graded by the instructor.

Closure:

Quiz questions that accompany the brainpop video (See “Teacher Notes”).



Day 2 – In the Lab

Materials Needed:

Data Table for Lab Activity (INSPIRE_Pounders_02_22_11_DT); Aluminum Pie Plates; Clothes Pins; Craft Sticks; Chop Sticks; Plastic Spoons; Large Jelly Beans; Gummy Worms; Sunflower Seed; Flat White Dried Beans; Timer; Plastic Cups

Lesson Performance Task/Assessment:

Students will test 4 types of beaks (spoon=scooping, chopsticks=probing, craft stick=shovel, clothes pin=grasping) to determine which beak works best for each food (jelly bean=snail, gummy worms=worms, beans=bugs, seeds=seeds).

The pie pan is the “environment” with all the foods randomly placed. The plastic cup is the “nest” where food will be placed after “capture.”

Students will have 30 seconds with the scooping beak to catch as many snails as possible. After 30 seconds, the number of snails caught is recorded and snails are returned to the environment. Students then have 30 seconds to capture worms. Proceed in this manner until each beak has been used for each food. Students will then total each row and column and answer the questions in the results section based on the data.

Lesson Relevance to Performance Task and Students:

Students will recognize the importance of adaptations to the long-term survival of individual organisms and species. Students will also gain a better understanding of competition based on environmental factors.

Anticipatory Set/Capture Interest:

The presence of candy will gain the students attention and interest in the lesson.

Guided Practice:

The instructor will demonstrate the performance task and explain the data table.

Independent Practice:

Students will collect, record and analyze data using the materials provided.

Remediation and/or Enrichment:

Remediation - IEP; Instructions will be given to resource teacher prior to lab day and resource teacher will be given the option of assigning lab partners.

Enrichment – Students may choose their favorite species of bird and complete a research report on the adaptations of that species.

Check for Understanding:

The data table and results sheet may be collected and graded by the instructor.



Closure:

Work areas should be cleaned and reset for the next class.

Possible Alternate Subject Integrations:

Ecology, Biology

Teacher Notes:

Brainpop is available on the internet. www.brainpop.com Some videos are “free” to view and use. A trial membership is available or subscriptions may be purchased on the site.

The video in the lesson is located in the category Science, under the topic of Ecology and Behavior and the video title Natural Selections. After watching the video, graded and review quizzes are available. The quizzes may be completed online or printed.

Day two may also be completed in the classroom, but desks or tables with flat surfaces are needed.

If actual edible foods are not suitable in the classroom, substitute pieces of yarn for the worms, marbles for jelly beans and some other type of flower seed for the sunflower seeds.

Reminders for students during the lab:

Birds only have one beak, so they may only use one hand – the second hand behind the back is recommended.

In nature, food sources are not usually found in piles, so foods in the activity should not be placed in piles in the pan for easy capture.