

Bountiful Beetles Lesson Plan

Lesson Title: Bountiful Beetles

Objectives:

Students will identify the life cycle, anatomy and other characteristics of beetles.

Students will conduct a simple research using books, encyclopedias, and/or the internet.

Students will compare and contrast different species of beetles on a Venn diagram.

Materials:

Book; *Bountiful Beetles*

Book Quiz *Bountiful Beetles* (Printable or Online Version)

Beetle Flashcards (Printable color set of 60+ beetles)

Beetle Inquiry Activity (Printable, 5 pages long)

Beetle Venn diagram (Printable)

Note: The materials for the crafts are listed with the craft's instructions below.

The Lesson Plan

1. Engage: The students will view the book, *Bountiful Beetles*.

2. Teach: Draw a chart on the board with the following underlined headings and lead a class discussion about the information about beetles from the book. Ask the children to share all the information they learned about beetles from the book and list their responses under the appropriate heading.

NOTE: You may choose to discuss 1 to 3 of the beetle topics listed below per day which will stretch the lesson out several days or, if time allows, discuss them all.

- a. Beetles' Body- three segments (head, thorax, abdomen), six legs, wings, elytra, antennae or feelers, pinchers, compound eyes, bright colors, patterns, sizes big and small, great sense of smell to find food.
- b. Beetles' Metamorphosis- egg, larva, pupa, adult.
- c. Beetles' Habitat- beetles live in all environments from deserts, rainforests, lakes, mountain tops, yards, parks, in our houses, even polar caps. Beetles live on every continent except Antarctica.
- d. Beetles' Diet- plants, other insects, carcasses, nectar, dung, (aquatic beetles eat fish and tadpoles)
- e. Beetle Species- 350,000 known species of beetles
- f. Beetles Existence- beetles have lived on Earth for 300 million years and 50 million years before there were dinosaurs, and beetles are still thriving today.
- g. Beetle Population- beetles make up the largest group of animals on Earth; nearly one-fourth of all animals are beetles.
- h. Beetles & the Ecosystem- beetles help balance the ecosystem, beetles clear pastures of cow dung, beetles eat aphid eggs and other crop-destroying insects to keep insect population in balance; beetles pollinate flowers and keep the soil rich in nutrients. However, some beetles can eat lumber and houses.

i. Types of Beetles-

- *Ladybugs are a farmer's best friend. They eat aphid eggs and other crop-destroying insects.
- *June bugs are seen in the summer months.
- *Fireflies or lightning bugs have special chemicals in their bodies that make them light up at night.
- *Weevils eat wheat crops, often seen in bags of flour or cereal in your pantry.
- *Potato bugs eat and destroy potato crops.
- *Pine bark beetles can eat millions of dollars worth of lumber.
- *Woodworm beetles eat houses, wood floors and wood furniture.
- *Leaf beetles are poisonous; Bushmen put this poison on their hunting arrows.
- *Ground beetles are potato farmer's best friend. They protect potato crops by eating the potato beetles.
- *Sunburst diving beetles carry a bubble of oxygen on their rear end to stay under water longer.

Guided Practice: Comparing Beetles with a Venn diagram

The teacher will shuffle the deck of beetle flash cards and ask a student to select two cards. Display the two beetle cards and draw a Venn diagram on the board. Ask the students to observe the two beetles and to describe how the beetles are alike and different. Write the students' responses in the Venn diagram.

Independent Practice 1: Book Quiz *Bountiful Beetles*

Students will complete the Book Quiz for *Bountiful Beetles* (Printable or Online Version)

Independent Practice 2: Beetle Inquiry Printable (5 pages) Internet or Book Research

The student will choose any beetle to conduct an internet search, or a book/encyclopedia search to find facts about their chosen beetle. Each student will need the Beetle Inquiry Printable (5 pages stapled) and use the internet and/or classroom/school library books to find the information needed to complete the Beetle Inquiry. When the Beetle Inquiry has been completed, the students may present their beetle findings to the class.

NOTE: Most school libraries have many books, encyclopedias and computers for students to find facts about beetles. This lesson offers students hands-on experience in conducting research with books and/or on the internet.

Independent Practice 3: Compare and Contrast Beetles and Beetle Illustrations

Give each student two Beetle Flash Card Printables and a Beetle Venn Diagram Printable. The student will draw and compare and contrast the similarities and differences between the two beetles on their flashcards and record observations on the Beetle Venn Diagram.

Craft Activity 1: Painted Rock Beetles – These painted rocks look like beautiful beetles! Each student will need: one rock (the student may bring one from home), assorted colors of paints, a paint brush and a paper towel.

Procedure: The students will use the paints to create colorful patterns, eyes, antennae and legs on their rock. Dry the rocks on a paper towel. Display the students' beautiful rock beetles on a table in the classroom. Students may name their beetle and create a beetle name tag to place in front of their beetle.

Craft Activity 2: Paper Plate Beetles Puppets – These are simple and fun puppets. Each student will need: two plain paper plates, assorted colors of paints, paint brushes, construction paper, glue, scissors, pipe cleaners, hole puncher and a stapler (with teacher supervision).

Step 1: Cut out six legs (2 sets of 3 legs) with the construction paper.

Step 2: Staple the two paper plate faces together, like a clam shell, around the edges of the plates. Be sure to staple the beetle's legs between the paper plates and leave enough room between the staples to slide your hand through at the bottom end of the plate.

Step 3: Paint the beetle's eyes on the top side of the plate. Paint the beetle's body with creative and colorful designs, patterns or polka dots. Let the beetle puppet dry.

Step 4: Punch two holes at the top to insert the pipe cleaner antennae. Twist the pipe cleaner to secure in place.

Step 5: Slide your hand through the opening and make your beetle come to life!

Closure: Beetle Presentations

The students will present their Beetle Inquiry Research Activity.

The students will share and observe each other's painted beetle rocks and beetle puppets.

Assessment:

Grade the Book Quiz Bountiful Beetles (The Quiz Key for grading is located below)

Grade the Beetle Inquiry Activity based on completion, accuracy and presentation.

Grade the Beetle Venn Diagram activity sheet based writing comparative observations about two beetles in the Venn diagram.

Grade the beetle crafts based on completion, creativity, use of vivid colors and patterns.

Bountiful Beetles

Quiz Key

1. How many body segments do beetles have?
 - a. one body segment
 - b. two body segments
 - c. three body segments**
 - d. four body segments

2. What are the names of the beetles' body segments?
 - a. top, middle, bottom
 - b. antennae, wings, elytra
 - c. head, stomach, legs
 - d. head, thorax, abdomen**

3. What are the stages in the beetle life cycle?
 - a. egg, hatched, young adult, old adult
 - b. egg, larva, pupa, adult**
 - c. infant, youth, adult, elderly
 - d. small, medium, large, biggest

4. _____ is the complete physical transformation of beetles.
 - a. Metamorphosis**
 - b. Metafantastic
 - c. Metabeetle
 - d. Metamagnificent

5. How long have beetles lived on Earth?
 - a. exactly 3 years
 - b. exactly 300 hundred years
 - c. about 300 thousand years
 - d. about 300 million years**

6. True or False? Beetles make up the largest group of animals on Earth.
 - a. True**
 - b. False

7. How many different species of beetles are known to exist?
 - a. 3 different beetle species
 - b. 35 different beetle species
 - c. 350 different beetle species
 - d. 350,000 different beetle species**

8. Beetles live on every continent except one. Which continent does not have beetles?
 - a. Africa

- b. Australia
- c. Antarctica**
- d. Asia

9. True or False? Some beetles are very poisonous.

- a. True**
- b. False

10. Approximately how big are the biggest beetles?

- a. 2 inches long
- b. 4 inches long
- c. 6 inches long**
- d. 80 inches long

11. What special body part protects the beetles' wings and body?

- a. the beetle suit of armor
- b. the beetle safety vest
- c. the elytra**
- d. the electric shell

12. How do antennae help beetles?

- a. Antennae keep beetles warm in the winter.
- b. Antennae help beetles find food, a mate and places to lay eggs.**
- c. Antennae are used like legs so beetles can run faster.
- d. Scientists have not discovered the purpose of antennae.

13. What kind of eyes do most beetles have?

- a. googly eyes
- b. compound eyes**
- c. triple eyes
- d. rainbow eyes

14. True or False? Beetles will eat almost anything, including dung.

- a. True**
- b. False

15. How many legs do beetles have?

- a. 2 legs
- b. 4 legs
- c. 6 legs**
- d. 8 legs

16. True or False? Some beetles protect plants and some beetles damage plants.

- a. True**
- b. False

17. How do ladybugs help farmers?

- a. **Ladybugs eat the eggs of insects that damage crops.**
- b. Ladybugs milk the dairy cows for the farmers.
- c. Ladybugs harvest the fruits and vegetables.
- d. Ladybugs frighten away the birds that could eat the crops.

18. How do beetles live in the desert where water is limited?

- a. Beetles do not need water to live and grow.
- b. Beetles do not live in the desert.
- c. **Beetles trap moisture under their wings.**
- d. Beetles always carry a bottle of water with them.

19. True or False? Beetles pollinate flowers.

- a. **True**
- b. False

20. Which sentence best describes the appearance of beetles?

- a. All beetles are the same color.
- b. All beetles are the shape and size.
- c. All beetles have poke-a-dots.
- d. **Beetles come in many different shapes, sizes, colors and patterns.**