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# Biology Mission: Discover and Classify a New Species!

**Focus:** Apologia Biology, Module 8: The Classification of Life

**Core Concept:** Applying the principles of taxonomy and binomial nomenclature in a creative, hands-on project.

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## Materials Needed

- Your Apologia Biology textbook (for reference)
  - Paper (plain and/or construction paper)
  - Art supplies (colored pencils, markers, crayons, or modeling clay)
  - Access to the internet for brief research
  - A notebook or journal for writing
  - "New Species Profile" worksheet (template provided below)
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## Lesson Plan

### Part 1: The Mission Briefing (10 minutes)

**Goal:** Activate prior knowledge and set the stage for the creative task.

1. **Discussion Starter:** Ask the student: "Scientists are constantly discovering new species in places like the deep ocean or remote rainforests. When they find one, what's the first thing they need to do to understand how it fits into the web of life?"
2. **Review Key Concepts:** Briefly review the Linnaean system of classification. Use the mnemonic "Did King Phillip Come Over For Good Soup?" to recall the levels:
  - Domain
  - Kingdom
  - Phylum
  - Class
  - Order
  - Family
  - Genus
  - Species
3. **Introduce the Mission:** "Today, you are a field biologist on a mission. You've just discovered a brand-new, never-before-seen organism! Your job is not just to draw it, but to figure out where it belongs in the grand tree of life. You must observe its characteristics, classify it, give it a scientific name, and present your findings."

### Part 2: The Discovery & Creation (30-40 minutes)

**Goal:** To design a unique organism based on logical adaptations to a specific environment.

1. **Choose a Habitat:** First, decide where your creature was discovered. This will guide its features. Encourage creativity!
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- *Examples:* A volcanic vent on the ocean floor, the canopy of a glowing alien forest, a crystallized cave system, or a desert made of metal sand.

2. **Brainstorm Adaptations:** Based on the chosen habitat, what features would your creature need to survive?
  - How does it breathe? (Gills, lungs, something else?)
  - What does it eat? (Is it a predator, herbivore, decomposer?)
  - How does it move? (Wings, fins, legs, slime?)
  - How does it protect itself? (Camouflage, armor, venom?)
  - What are its sensory organs? (Eyes that see in the dark, antennae that sense vibrations?)
3. **Create Your Creature:** Use the art supplies to bring your organism to life. This can be a detailed drawing, a diagram, or a clay sculpture. The visual representation is key!

### Part 3: The Classification Challenge (25-30 minutes)

**Goal:** To apply the rules of taxonomy to the created organism, justifying each choice.

1. **Fill out the New Species Profile:** Use the worksheet template below. This is where the critical thinking happens. The student will have to work their way down the classification ladder, making choices and defending them.
  - **Kingdom:** Is it an animal, a plant, a fungus? Based on how it gets energy. Let's assume Animalia for this example.
  - **Phylum:** Does it have a backbone (Chordata)? An exoskeleton (Arthropoda)? Is it soft-bodied (Mollusca)?
  - **Class, Order, Family:** This is where research might be needed. For example, if it's a mammal with fins, they might look up classifications for whales or dolphins to see how scientists handle similar traits. The goal isn't to be 100% accurate for a real-world journal, but to make logical, defensible choices.
2. **Assign a Scientific Name:** Using the rules of binomial nomenclature, create a unique Genus and species name.
  - The name should be descriptive (e.g., *\*Nocturnus crystalophaga\** for "night-time crystal-eater").
  - Remind the student: Genus is capitalized, species is lowercase, and the whole name is italicized or underlined.

### Part 4: Present Your Findings (10 minutes)

**Goal:** To communicate scientific findings clearly and concisely.

1. **The "Scientist's Report":** The student presents their creature to you (the "review board"). They should:
  - Show the illustration/model.
  - Announce its scientific and common name.
  - Describe its habitat and key adaptations.
  - Walk through the classification choices, explaining the reasoning for placing it in its specific Phylum, Class, etc.

## Assessment & Rubric

Assess the student's "New Species Profile" and presentation using these criteria. This focuses on the application of concepts, not just artistic skill.

| Category | Excellent (3 pts) | Good (2 pts) | Needs Improvement (1 pt) |
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|                                 |                                                                                                                           |                                                                                                                |                                                                                                   |
|---------------------------------|---------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------|
| <b>Classification Logic</b>     | Each classification level is chosen with a clear, logical reason that connects directly to the creature's features.       | Most classification levels are logically justified, but one or two choices may be unclear or weakly supported. | Classification choices seem random or lack justification based on the creature's characteristics. |
| <b>Adaptation &amp; Habitat</b> | The creature's adaptations are creative and clearly linked to the challenges and resources of its chosen habitat.         | The creature has interesting adaptations, but their connection to the specific habitat could be stronger.      | The creature's features do not seem well-suited for its described habitat.                        |
| <b>Binomial Nomenclature</b>    | The scientific name is creative, descriptive, and correctly formatted (Genus capitalized, species lowercase, italicized). | The name is creative but has a minor formatting error (e.g., capitalization).                                  | The name is incorrectly formatted or doesn't follow the two-name convention.                      |

## Differentiation and Extension

- **For Support:** Provide a pre-selected list of three habitats to choose from. Give a partially filled-out classification chart (e.g., fill in Kingdom and Phylum) and ask the student to complete the rest.
- **For a Challenge (Extension Activity):**
  - **Create a Food Web:** Design two other new organisms that live in the same habitat and create a food web that includes your original creature. Is it a producer, primary consumer, or apex predator?
  - **Write a "Discovery Journal" Entry:** Write a one-page narrative from the perspective of the scientist who discovered the creature. Describe the moment of discovery, the initial observations, and the excitement of realizing it was a new species.

## Worksheet Template: New Species Profile

### Official Classification Report

**Common Name:** \_\_\_\_\_

**Scientific Name:** \_\_\_\_\_

**Habitat Discovered In:** \_\_\_\_\_

#### Key Adaptations (List 3):

1. \_\_\_\_\_
2. \_\_\_\_\_
3. \_\_\_\_\_

### Taxonomic Classification:

- **Domain:** \_\_\_\_\_ (Reason: \_\_\_\_\_)
- **Kingdom:** \_\_\_\_\_ (Reason: \_\_\_\_\_)
- **Phylum:** \_\_\_\_\_ (Reason: \_\_\_\_\_)
- **Class:** \_\_\_\_\_ (Reason: \_\_\_\_\_)
- **Order:** \_\_\_\_\_ (Reason: \_\_\_\_\_)
- **Family:** \_\_\_\_\_ (Reason: \_\_\_\_\_)
- **Genus:** \_\_\_\_\_ (Reason: \_\_\_\_\_)
- **Species:** \_\_\_\_\_ (Reason: \_\_\_\_\_)