The Friendship Web: Who Needs Who in Nature?

Materials Needed:

- One large, clear glass jar or plastic container (like a large pickle jar or a small fishbowl)
- Small rocks or pebbles
- Soil or dirt
- Natural items from outside: a few small twigs, green leaves, a small flower (if available), a patch of moss
- Small toy animals (e.g., a bee, a squirrel, a worm, a ladybug)
- A small piece of blue paper or felt (for a pond or stream)
- A cotton ball (for a cloud or the sun)
- Optional: A spray bottle with water

Lesson Plan Details

Subject: Science (Life Science)

Grade Level: Kindergarten / 1st Grade (Age 6)

Time Allotment: 45 minutes

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1. Learning Objectives

By the end of this lesson, the student will be able to:

- Build a simple model of an ecosystem.
- Verbally explain at least one way a plant and an animal depend on each other (e.g., "The bee needs the flower for food.").
- Identify the sun, water, and soil as essential non-living parts of an ecosystem.

2. Alignment with Standards

This lesson aligns with the Next Generation Science Standards (NGSS):

- **K-LS1-1:** Use observations to describe patterns of what plants and animals (including humans) need to survive.
- **K-ESS3-1:** Use a model to represent the relationship between the needs of different plants or animals and the places they live.

3. Instructional Strategy: The "Ecosystem in a Jar"

This lesson uses a hands-on, model-building approach to make the abstract concept of interdependence tangible and memorable.

Part A: The Hook - "What Do I Need?" (5 minutes)

- Sit with the student and ask simple questions to spark curiosity.
- **Teacher:** "What do you need to live a happy, healthy day?" (Guide towards answers like food, water, a home, sunshine to play outside).

- **Teacher:** "Great! Just like us, plants and animals have things they need to survive. A flower can't just get up and get a drink of water from the sink, so how does it get what it needs?"
- Briefly discuss that everything in nature has a special home where it can find everything it needs. Today, we are going to build one of those special homes!

Part B: Main Activity - Build Your Ecosystem (20 minutes)

Place all the materials on a table. Guide the student through building the ecosystem layer by layer, focusing on the "why" for each step.

1. **Foundation (Non-Living):**
    - **Teacher:** "Every good home needs a strong floor. Let's add some rocks to the bottom of our jar. This helps with water drainage so the plant roots don't get too wet."
    - **Teacher:** "Next, what do you think plants need to grow their roots in?" (Answer: Soil). "Let's add a layer of soil. This gives our plants food and a place to live."
2. **Life (Living):**
    - **Teacher:** "Now for the living parts! Let's carefully place our twigs and leaves inside. What animal might use a twig for its home?" (Answer: A bird, a squirrel). "Let's plant our little flower in the soil."
    - **Teacher:** "Our ecosystem needs water. Let's add our 'pond' (blue paper) or give a little spritz of water from our spray bottle. Everything needs water to live."
3. **The Connections (Interdependence):**
    - **Teacher:** "It's time to add our animal friends. Let's choose one. A bee! Where does the bee belong in our jar home?" (Guide student to place it on or near the flower).
    - **Teacher:** "Perfect! Why does the bee need the flower?" (For food/nectar). "And guess what? The flower needs the bee, too! The bee helps the flower make seeds. They are friends who help each other!"
    - **Teacher:** "Let's add a squirrel. What does the squirrel need in our jar?" (The twig/tree for a home, maybe it eats nuts that fall from the tree).
    - **Teacher:** "Finally, let's stick this cotton ball to the inside of the jar lid. This is our sun. Does the flower need the sun?" (Yes, for food and to grow). "Does the squirrel need the sun?" (Yes, for warmth and to see). "The sun gives energy to EVERYONE!"

4. Engagement and Motivation

The student's interest is maintained through direct participation, making choices (which animal to add next), and creating a tangible product (the jar) that they can keep. The storytelling element in the assessment phase allows for creative expression.

5. Differentiation and Inclusivity

- **To simplify:** Focus on just two or three elements. For example, just soil, a flower, and a bee. The core concept remains: the bee needs the flower, and the flower needs the soil.
- **To extend/challenge:** Introduce the concept of a decomposer. Add the toy worm and ask, "What is the worm's job? It helps turn old, dead leaves back into good soil for the plants! It's nature's clean-up crew." You could also make a second jar for a different ecosystem (like a desert or ocean) and compare the needs of the animals.

6. Assessment Methods (10 minutes)

Use a "Show and Tell" style of formative assessment.

- **Teacher:** "Tell me the story of your new ecosystem. What happens in your jar on a sunny day?"
- Listen for the student's ability to link at least one plant and animal. (e.g., "...and then the bee flew to the flower to get some food...").

- Ask direct, probing questions to check understanding:
    - "What would happen to the bee if we took the flower away?"
    - "Why is the soil so important in our jar?"
    - "What job does the sun have?"

7. Closure (5 minutes)

- **Teacher:** "You did an amazing job building our ecosystem! What is the most important thing we learned today?"
- Guide the student to the main idea: In nature, everything is connected in a big "friendship web." Plants, animals, the sun, water, and soil all work together as a team. Nothing lives all by itself.
- Place the "Ecosystem in a Jar" in a visible spot to serve as a reminder of the lesson.