Recipe for an Ecosystem

(adapted from The ABCs of Ecology)

Outdoor Wonders and Learning™

The students will observe, identify, and define the components of an ecosystem using the classroom and outdoor study area.

Engage

Supplemental Reading

Grades K-2:
Tree of Life: The Incredible Biodiversity of Life on Earth
By Rochelle Strauss

Because of an Acorn
By Lola and Adam Schaefer

Grades 3-5:
DK Eyewitness Books: Ecology
By Brian Lane and Steve Pollack

Grade Levels:

K, 1, 2, 3, 4, 5

Curriculum Correlation:

NCSCS – Science

1.L.2.1, 1.L.2.1,

4.L.1.1,4.L.1.2, 4.L.1.3

5.L.2.1, 5.L.2.2, 5.L.2.3

Materials:

Whiteboard or Smart Board

Duration:

20-30 minutes

Location:

Classroom or Outdoor Space

Procedure:

***It is important to note that this activity is more about how their fractions add up and if they can provide evidence and reasoning for their claim about the proportions of their ecosystem.**

1. With a group brainstorm, ask the students: What have you heard about an ecosystem? Write down their answers.
2. Based on their notes, ask the students if they think their classroom is an ecosystem. Ask them to explain their answers and make comparisons to other examples they might be thinking of.
   - Let students debate but because the classroom has living things (students and teacher) and nonliving things (desk, chairs, whiteboard, sunlight, air, etc.) the classroom fits within the definition of an ecosystem.
3. Think, Pair, Share: Have the students write down their own definition of a ecosystem, then share with a partner, then with the group. Work together as a class to agree on the main components of the definition, aligning it to the standard definition provided:
   - The interaction of living (***biotic***) and nonliving (***abiotic***) things in any given environment
4. As a class, generate a list of different types of ecosystems both near where they live and around the world. This could include but is not limited to: forest, field, lake, beach, ocean, wetland, tundra, rainforest, stream, desert, estuaries, salt marshes, etc.
   - Assign pairs or small groups to an ecosystem and have them generate another list of all the different biotic and abiotic factors within their assigned ecosystem. Have each group share with the rest of the class the different components from their ecosystem.

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- Encourage the groups to format their biotic and abiotic factors as an actual recipe.

  Example: Ocean

  Abiotic- 3/4 Salt water

  1/4 Sand or sediment on the ocean floor

  Biotic- 1/3 plant life (seaweed, kelp, algae, phytoplankton)

  5/6 invertebrates (coral, jellyfish, urchins, crustaceans, zooplankton)

  1/6 vertebrates (sharks/rays, whales, dolphins, turtles, fish)

5. Ask the students: How did you figure out the portions of your ecosystem? Did any of your ideas change during this activity?

Variation:

1. Use one ecosystem as an example and ask the class what would happen to this ecosystem if something was removed from the ecosystem.

   - For example, if your class analyzes the different components of a forest ecosystem, ask them to think about what would happen if all of the trees were removed or if all of the insects disappeared, or if there was no water left.

   - Ask students what humans might be able to do to help this ecosystem

     *Plant native species

     *Reduce development and human impact

Learning Targets:

1. Compare the proportions of living and nonliving things in different ecosystems.

2. Infer what might happen to an ecosystem or a living thing within an ecosystem if another component (food source, water source, shelter source, space, etc.) within the ecosystem was removed.