5E Lesson Plan – Food Chains

**Time Estimate:** 60 minutes

**Materials Needed:**
- Food Chain Worksheet
- Pencil
- Computer & projector

**Objective:**
The purpose of this lesson is to nurture the student’s habits of mind by using the ideas of systems, models, changes, and scales in exploring scientific and technological matters. One example of this is the use of a food chain or food web as a model for the interactions and relationships between living organism and the environment.

**Major Concept (Big Idea):**
Students should understand that the Earth’s environment consists of living and non-living components. These components have a delicate balance. Nutrient cycles and energy flow maintain this balance. This unit allows students to explore how energy is passed from one organism to another within an ecosystem. Students can also think about the effect that humans can have on the ecosystem and what they can do to avoid and reverse negative effects. The sun is the main source of energy. Food webs and food chains are models used to depict the interdependence between organisms.

“What is a biome?” This question was narrowed to, “What roles do animals play in a temperate biome ecosystem?” The objective of the activity was for students to grasp the concept of a **niche**, or specific “job” within an ecosystem.

**Content Knowledge Objectives:**
- The sun is the primary source of energy for the living world.
- The food web demonstrates that all energy is transferred and recycled among organisms and their environment.
- Organisms depend on one another as well as their environment for survival.

**Standards Objectives:** Georgia Standards of Excellence

S7L4 Students will examine the dependence of organisms on one another and their environments.

a. Demonstrate in a food web that matter is transferred from one organism to another and can recycle between organisms and their environments.

b. Explain in a food web that sunlight is the source of energy and that this energy moves from organism to organism.

d. Categorize relationships between organisms that are competitive or mutually beneficial.
S7CS5. Students will use the ideas of system, model, change, and scale in exploring scientific and technological matters. Observe and explain how parts can be related to other parts in a system such as predator/prey relationships in a community/ecosystem.

**Nature of Science Objectives:**

**Scientific inquiry**

- Scientists differ greatly in what phenomena they study and how they go about their work. Although there is no fixed set of steps that all scientists follow, scientific investigations usually involve the collection of relevant evidence, the use of logical reasoning, and the application of imagination in devising hypotheses and explanations to make sense of the collected evidence. (By the end of 8th grade)

**5E Learning Cycle: Engage-Explore-Explain-Elaborate (Extend)-Evaluate**

**ENGAGE** *(Tap prior knowledge, focus on learners’ thinking, & spark interest in the topic):*

Watch the two videos from the Lion King. The circle of life and the dialogue between Simba and Mufasa. Students should note what Mufasa is trying to teach Simba during the “morning lesson”. Students should find a partner and see if they can identify any “delicate balance” in their surroundings or their communities.

- Students should write down a definition for the circle of life.
- Each group should write down an example of a delicate balance so Simba may better understand his father’s message.

The Circle of Life: [https://www.youtube.com/watch?v=GibiNy4d4gc](https://www.youtube.com/watch?v=GibiNy4d4gc)

Morning Lesson: [https://www.youtube.com/watch?v=bW7PItaawfQ](https://www.youtube.com/watch?v=bW7PItaawfQ)

**EXPLORE ~HANDS-ON~*(Provide learners with common, concrete tactile experiences with skills and concepts, observe and listen to students, ask probing questions, and act as a consultant):*

Students should organize the animals given into the circle of life with yarn connecting animals that serve as food to those that eat them. Students should create another circle of life example of the back of the card.

- **Students should be asked what gives the plant energy.**
- **Students should ask what the yarn represents**
- **Other than feeding relationships, what other types of relationships do organisms have with each other?**
EXPLAIN ~MINDS-ON~ (Encourage students to explain concepts in their own words, ask for justification, use students’ prior experiences as the basis for explaining concepts, clarify and correct misconceptions)

Explain to the students that when they were organizing their picture cards to represent the circle of life, they were also making a food chain. Go through each of the slides and have students take notes. After going through all 4 slides on the website, ask the following questions.

• Why are green plants called producers? A: They make their own food.
• Why animals are considered consumers? A: They get their food from plants or other animals.
• What is a predator? A: An animal that eats other animals.
• What is a prey? A: The animal “a consumer” that is being eaten

ELABORATE ~HANDS-ON~ (Apply same concepts and skills in a new context resulting in deeper and broader understanding)

Come up with a sample food web. This will contain many smaller food chains. Why is a food web more accurate than food chain?

EVALUATE (Observe students as they apply new concepts and skills, assess formally and informally student progress toward achieving the learner outcomes-knowledge and skills-, allow students to assess their own learning and group-process skills)

Students will complete a worksheet so teachers are able to see if they understand the basic concepts of energy flow. This will serve as a formal assessment.

Differentiation/ Accommodation

Conditions for Learning Science: Using 5E Learning Cycle, students will be

• participating in a small group/cooperative experience
• collaborating in cooperative groups to research, design, and construct a group “Biocube” for peer sharing