



Let's Eat!

Purpose:

- The purpose of this activity is to illustrate the flow of energy through trophic levels. Students will understand how different organisms depend on each other and ultimately the sun for their energy.

Objectives:

- Students will simulate the flow of energy through an ecosystem by playing the “Let’s Eat!” trophic level game.
- Students will explain the importance of each trophic level by discussing the effects of removing members of the ecosystem.
- Students will create an essay or diagram to illustrate that the energy in all animals’ food was once energy from the Sun.

Time Required: 30 minutes – 1 hour

Appropriate grades: 5th-8th

NGSS and Common Core Standards:

5-LS2-1: Develop a model to describe the movement of matter among plants, animals, decomposers, and the environment.

5-PS3-1: Use models to describe that energy in animals’ food (used for body repair, growth, motion, and to maintain body warmth) was once energy from the sun.

Materials:

- Trophic level label necklaces – Producers, Consumers, etc. - 30 (provided)
- Simplified label necklaces – Herbivores, Omnivores, etc. - 30 (provided)

Activity:

Introduction	Ask students where we get our energy from – the answer is food! Ask students if they know where their food gets its energy from. Have them brainstorm in partners and share with the class. Introduce the activity by explaining that the class will be tracing the flow of energy all the way back to where it begins – the sun!
Body	Randomly distribute player roles among everyone. There will only be one “sun” player, but all other roles are variable. There will need to be producers, primary consumers, secondary consumers, tertiary consumers, and decomposers.



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Choose a maximum of three decomposers because they will continuously be in play. If the group is small, only one decomposer is necessary. Ask students to turn to a partner to share their role and explain what they think it means (i.e. what they will be “eating” in the game). Have a few students share their role with the class. Make sure that students understand the following:

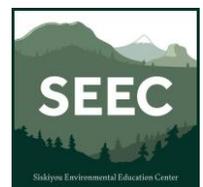
- The sun produces energy throughout the game
- Producers use the sun’s energy to create food
- Primary consumers feed on producers
- Secondary consumers feed on primary consumers
- Tertiary consumers feed on secondary consumers
- Decomposers feed on dead organic matter (meaning they can feed on any organism once it dies)

Have the class form a circle; the inside of the circle will be the playing area. Explain the following rules to the class:

Rules of the Game:

- If a food source is available, wait 3 seconds and then enter the circle.
- If no food source is available, step back out of the circle and wait 5 seconds.
- The game begins with the “sun” player standing in the middle of the playing area.
- “Tap” a food source to eat it. Wait 3 seconds between “taps.”
- Producers can go tap the sun to “feed” from it at will. Primary consumers will follow, and so on. Make sure students count 3 seconds between taps to avoid confusion.
- When a player is tapped, that player must freeze and raise their hand, signifying that they are now dead organic matter to be decomposed. That player must remain frozen until tapped by a decomposer. After being decomposed the player then steps outside of the circle and waits for an available food source again.
- If a player remains outside of the circle for 10 seconds, they become extinct.
- Inform students that the objective of this game is to keep energy cycling as long as possible. Let the students know that at random times throughout the game you might announce new rules.

To help students better understand the rules, do a slow run-through. Let students play the game for several minutes before announcing that the decomposers are to sit down. Once the game comes to a standstill, reintroduce



	<p>the decomposers. After a bit more time, ask the “sun” player to sit down. Continue experimenting with the game as you see fit.</p> <p>After the game is over, engage students in a discussion about what they experienced. Ask them what they noticed when the decomposers were removed from the system. Ask about what they noticed when the sun was removed.</p>
Closure	<p>Once the game has concluded, students will summarize the flow of energy through the “ecosystem” represented by the class. Students may choose to write a short essay or draw a diagram. Students may work independently or in small groups.</p> <p>Once students have completed their essays/diagrams, ask them to share where they believe the energy in the ecosystem ultimately comes from. The answer is the Sun!</p> <p>In conclusion, remind students of the importance of all of the different trophic levels that they observed during the game. Each individual part is essential in cycling the sun’s energy throughout the ecosystem.</p>

Extensions:

- This activity could be partnered with the “What's Going On?” activity included in this kit to further illustrate the concept of systems and interacting components.
- Optional reflective essay question: “What is the ultimate source of energy on Earth and how does it become food for other organisms?” The answer would be the sun and should be followed by a simple explanation of the four main trophic levels.

Modifications:

- **Lower Elementary:**
 - For younger groups, 2 sets of simpler trophic level cards are included. These cards include Plants, Herbivores, Carnivores, Omnivores, and Decomposers.
- **High School:**
 - With older learners, this game can be made more complex by having learners pick more specific organisms. For instance, someone could be an omnivore and choose whether to eat a plant, animal, or fungus. Alternatively, the game could be modeled after a particular ecosystem and roles could be distributed as organisms of that ecosystem.
 - Have high school students research an animal native to the area. They should be able to summarize the animal’s trophic level, ecosystem services, and conservation status. Have students create a simple food web including their organism to better understand their place in the ecosystem.



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