

BREAKING THE FOOD CHAIN

Performance Standard 12B/11A.C

Students will apply the process of scientific inquiry to examine interdependence of organisms in ecosystems accordingly:

- *Knowledge*: Describe the interaction between living and non-living factors in an ecosystem including scenarios associated with loss of resources.
- *Application*: Dramatize the roles of food chain organisms in various scenarios.
- *Communication*: Explain how living things depend on one another for survival in terms of various food chains.

Procedures

1. ***In order to know and apply concepts that describe how living things interact with each other and with their environment (12B) and know and apply the concepts, principles and processes of scientific inquiry (11A),*** students should experience sufficient learning opportunities to develop the following:

- Identify what resources living things need to stay alive and why they need them.
- Describe and explain a food chain in different ecosystems including how the organisms depend on one another for survival.
- Dramatize and explain a food chain.
- Suggest additional variations in the scenarios and results.

Note to teacher: This activity relates to knowledge associated with standard 12B, while addressing the performance descriptors for stage C within standard 11A. Applying scientific habits of mind noted in standard 13A are foundational to these activities.

2. Have students review and discuss the assessment task and how the rubric will be used to evaluate their work.
3. Begin guided or shared inquiry by having students brainstorm possible questions about the human food chain: What do we eat? Where does it come from? What does it eat? What does it need to stay alive, etc.? Guide students toward answering their questions using applicable scientific vocabulary terms and resources. Ask students to propose explanations of what would happen to the living things in the food chain if any of the living organisms or resources were removed from the food chain one at a time.
4. Continue guided or shared inquiry by having students ask question about the food chains in ecosystems they have studied. Guide the students toward using the terms of producer, primary and secondary consumer, etc. They should respond to questions with consideration to the natural resources necessary for survival.
5. Have students role-play the situation in which the food chain is broken.
 - Assign the following roles (producer, primary consumer, and secondary consumer) to groups of three students.
 - Prepare index cards or slips of paper with the following role playing scenarios for the students to act out how each 'role' would react in this scenario:
 - (1) Your group is made up of organisms that live in a habitat that has been devastated by fire. All the plants (producers) have been destroyed.
 - (2) Your group lives in a habitat that has lost the secondary consumers (carnivores) to hunters who have removed them out of fear of what they would do to their farm animals.
 - (3) Your group lives in a habitat that has been poisoned by a toxic chemical that has killed the primary consumers (plant eaters).
6. Ask students to suggest different variations of scenarios and possible results.
7. Evaluate each student's work using the Science Rubric as follows and add the scores to determine the performance level:
 - *Knowledge*: Identification of the resources necessary for survival by each of the food chain's members was complete and accurate.
 - *Application*: The food chain impact was logical and accurate.
 - *Communication*: The explanation (and/or role playing) clearly expressed what would happen if one element was removed from the food chain.

Student Work Samples not available

Time Requirements

One class period (two if role playing)

- **Resources**
- Copies of the “Food Chain” task sheet
Science Rubric

BREAKING THE FOOD CHAIN SCENARIOS

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Your group lives in a habitat that has lost the secondary consumers (carnivores) to hunters who have removed them out of fear of what they would do to their farm animals.

Your group lives in a habitat that has been poisoned by a toxic chemical that has killed the primary consumers (plant eaters).