Summary:
Students create simple food chains based on their lunch items.

The "Sun"wich

Grade Levels: K-4

Subject Areas: Language Arts, Mathematics, Life Science, Environmental Literacy & Sustainability, Family Living and Consumer Education

Setting: Classroom

Time: Preparation: 30 minutes
Activity: 50-minute period

Vocabulary: Carnivore, Consumer, Decomposer, Energy, Food chain, Food web, Herbivore, Primary consumer, Producer, Secondary consumer, Solar energy, Sun, Thermal energy, Trophic level

Standards Addressed:
CC ELA: L.K.1.D&F, L.K.2&4-5.A, L.1.1&5.A, L.1.2.B, L.3.1.I, L.3.2, L.3.4.D, L.4.1.F, RI.3.3-4, SL.K.1&3-4&6, SL.1.1.B, SL.1.3-4, SL.2.1.B-C, SL.2.2, SL.3.1.D, SL.3.6, SL.4.1.C-D, W.K.2&8, W.4.2.D

CC Math: MP4, MP5, MP6, 1.MD.4, 2.MD.9, 3.MD.3

NGSS: K-LS1-1, 5-PS3-1
SEP: Developing and Using Models, Science Models, Laws, Mechanisms, and Theories Explain Natural Phenomena
DCI: LS1.C: Organization for Matter and Energy Flow in Organisms, PS3.D: Energy in Chemical Processes and Everyday Life
CCC: Systems and System Models

EL&S: Connect: C1.A.i, C1.B.e
Explore: EX2.A.i, EX2.A.m, EX2.B.e, EX3.B.e, EX4.A.e

Materials:
- A ham (or other type) sandwich
- Pictures/models representing items in the sandwich and food chains (Optional; see NOTE in Step 2)
- ***Energy Learning Logs*** and writing implements

Related KEEP Activities:
The KEEP Activity "Energy from Food" is an ideal follow-up to this activity. Students learn how food is the fuel that our bodies use to move and grow. Encourage students to add humans to their food chains. Available at keepprogram.org.

Objective

- Students will be able to show that energy found in food originates from the sun.

Procedure

1. Show students the sandwich and ask them what it is. Tell them it is not just a sandwich but a "sun"wich as well. Ask them what they think you mean by this. Tell them the sandwich is made out of the sun. Point to the bread and ask them what it is made out of. Help them to understand that bread comes from wheat, which is a plant that uses the sun's energy to grow.

2. Challenge students to trace each food item in the sandwich back to the sun. For example, ham comes from pigs that eat corn, and corn uses the sun's energy to grow. NOTE: To make this activity more hands-on, have pictures or 3-D models of each food item students list (e.g., pictures of ham slices, pigs, corn, and the sun). The pictures can be drawn, cut from a magazine, or constructed from felt or other materials. Models can be made out of clay or various recycled materials.

3. Point out the pig, corn, and sun, and explain that these items constitute a food chain. Ask students for a good definition of a food chain. Work with them to write a one-sentence definition and write it on the board. Check to see that the statement references the sun. Have students record the definition in their ***Energy Learning Logs***. NOTE: To bring deeper understanding to the lesson and address more science standards, explain to students that a food chain is an example of a system. Help students identify where water and air fit into the system.

Assessment

- Set up "snack stations" around the room with items such as crackers, cheese, toast, etc. Have students create food chains for each station using drawings or cutouts from magazines (you might want to check their work before they move onto the next station). Have them illustrate food chains in their ***Energy Learning Logs***.
- Students can add their food chains to the ***Energy Flow Mural***. Have them make connections from the sun to plants to animals and to their school. They can use illustrations from magazines or use their school lunch as an example. See Extensions for other ideas.

Extensions

If the class is adding food chains to an ***Energy Flow Mural***, you might want to challenge them to consider what happens to the food and energy after they consume the food. We get energy from food through a process called respiration, which is a type of burning. Students can detect evidence of this process by feeling the thermal energy in their bodies. Help them understand that much of the energy from food leaves our bodies through heat transfers. You can also choose to have students learn about the school's waste disposal systems and how wastewater is treated. Another aspect to explore is what happens to uneaten food and investigate the possibilities of composting.

In the lunchroom, have students weigh or record the amount of food they throw away for one week. Discuss the implications of wasting food and suggestions for eating food more wisely. Tie this information in with a nutrition unit while discussing healthy eating habits. Students can also record the amount of packaging they generate. They can look into options of recycling materials, composting, and buying efficiently packaged materials. A compost bin provides useful information about decomposition and energy transfers. Contact your local solid waste agency or extension office about composting information and related lesson plans.