Obtaining Energy, Part 1

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Big Idea for Physical Education	Big Idea for Science
Movement Competency	Life Science

Standards

SC.4.L.17.2: Explain that animals, including humans, cannot make their own food and that when animals eat plants or other animals, the energy stored in the food source is passed to them.
PE.4.M.11: Apply movement concepts to the performance of locomotor skills in a variety of movement settings.

Learning Goal for integrated lesson plan

The student will
- explore that animals, including humans, cannot make their own food and that when animals eat plants or other animals, the energy stored in the food source is passed to them.

Vocabulary common to both disciplines

- locomotor
- prey
- predator
- herbivore
- carnivore
- producer
- consumer
- food chain

Summary of Science Investigation	Summary of Physical Education Activity
The students will begin by exploring food chains through an organism card sort, identifying relationships for how each organism obtains energy. The students will then participate in a student centered lab task by analyzing an image and brainstorming organisms that might live in the location. They will explore how these organisms might be related.	The students will demonstrate understanding of the food chain and strategies for survival while moving in a variety of locomotor skills.

Assessment Tools - Science	Assessment Tools - PE
After students complete the card sort, the teacher can determine who might have background knowledge on this standard. After the student centered lab task, the teacher will be able to determine prior knowledge regarding vocabulary.	Use teacher observation/interaction while students are participating in the activity to see if students meet and accomplish the lesson objectives. Teachers with Plickers cards can use the following questions to assess student learning: **Plickers Questions:** *1. What is a food chain?* *A. food connected by a chain* *B. fast food restaurants* *C. transfer of energy from one species to another.*

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	2. What starts the food chain? *A. water* *B. plants* *C. bird* *D. Sun*

Integrated Assessment
Students will take the knowledge they learn in the classroom and apply it during their Physical Education Task. Students will participate in a food chain tag activity.

Science Investigation: Organism Card Sort

Duration of Lesson
15-20 minutes of teacher prep to copy, cut and stuff envelopes with card sort cards, 30-40 minutes for student tasks

Setup/Materials
● Organism Card Sort (attached) - 1 set for collaborative group of 5 ● manilla envelope - 1 for each collaborative group of 5 ● computer ● projector ● Florida Marsh Ecosystem images (attached) ● chart paper - 1-2 pieces for teacher to create “parking lot” for discussion during lesson 2 ● markers

Procedure
Engage: (10 minutes) ● Teacher will break students into collaborative groups, five students per group. Students should be seated at tables, or desks that are grouped with all students facing each other. ● Teacher will pass out manilla envelopes containing the organism card sort items to each collaborative group. ● Explain: The students will be working together to sort the organisms based on where they get their energy. Share that the students will be required to explain their thought process when the timer goes off. The students will have 5 minutes to sort the cards and be prepared to share their reasoning. ● During the student discussion, the teacher will record vocabulary that may arise on the chart paper. ○ Examples: carnivore, herbivore, omnivore, producer, consumer **Explore: (11-20 minutes)** ● Student-Centered Station Lab: ○ Students will work in collaborative groups of 2 or 3. The teacher will project the first image of a marsh area on the board. Each group will be provided time to discuss each portion of this task. ○ **Step One:** Identify 5 organisms that live within a Florida marsh area (pictured). Students can list their ideas on a post-it note. Then, students will discuss how these organisms might be related for 3-5 minutes. ○ **Step Two:** Project the second image (the same as the first) however it includes a marsh area

food chain. Students will then discuss how these organisms are able to obtain energy. After about 3-5 minutes have the students rap up their discussion and prepare to share.
    - **Whole Group:** The teacher will document student responses from this task on chart paper to have for a later discussion. (5-10 minutes)

Note: Lesson will continue in Obtaining Energy, Part 2.

Physical Education: Food Chain Tag

Duration of Lesson
5-minute warm up/35-minute lesson
Materials
● cones to create a large rectangular boundary ● pool noodles of 2-3 different colors ● Rock, Paper, Scissors Food Chain directions (attached)
Safety
Maintain personal space, clear and safe area for movement. Additional focus should be on students looking forward and side to side when moving. Students should also work on dodging others when moving.
Procedure

Essential Question: What are the different ways our body can move through a given space?
Warm Up: Rock, Paper, Scissors Food Chain

***Procedure*:**

1. What are some ways that you can move in a tag game? Can anyone name a link in a food chain? Be sure students understand the vocabulary words of prey and predator.
2. Start game with different prey and predators in a 5-link chain. For this procedure, the chain is: Sun, plant life (grass), grasshopper, lizard and hawk.
3. Pool noodles are distributed as follows: grasshoppers – no noodles, lizard – blue noodles, hawks – green noodles.
4. Grasshoppers ***flee*** from lizards. Lizards have two jobs: to ***chase*** grasshoppers and ***flee*** from hawks. Hawks ***chase*** lizards. Hawks may not tag grasshoppers.
5. Start game with different groups in different corners of the boundary.
6. Have students say the word tag when they use the noodle to tag someone.
7. On teacher command, the game begins.
8. Once tagged, the student who is tagged immediately steps out of the boundaries and walks the perimeter of the boundaries. While the student(s) are walking, they should continue to observe what is happening in the game. They can also walk with a buddy and discuss what they were in the game and what happened to them.
9. Game continues until one group is out (Grasshoppers or Lizards). Have students discuss why the food chain stopped.
10. Repeat the game with same students in the same positions 2 more times before changing noodles to new taggers.

*Variation: At the start of the third game, the hawks are not allowed to leave the nest for 30 seconds. After playing the 3rd round, huddle the students in and talk about which of the animals were the prey/predators.

This allows the lizards to only be predators and get a head start on tagging grasshoppers. Teacher calls hawk from nest to join game. Play using different locomotor skills and then discuss if using the various locomotor skills changed the outcome of the game.

Discuss with your shoulder buddy:

- Have students discuss ways that they thought were successful that allowed them to stay in the game longer.
- Which part of the food chain did you feel was the hardest to survive? Why?
- What are some ways you can move in a tag game?

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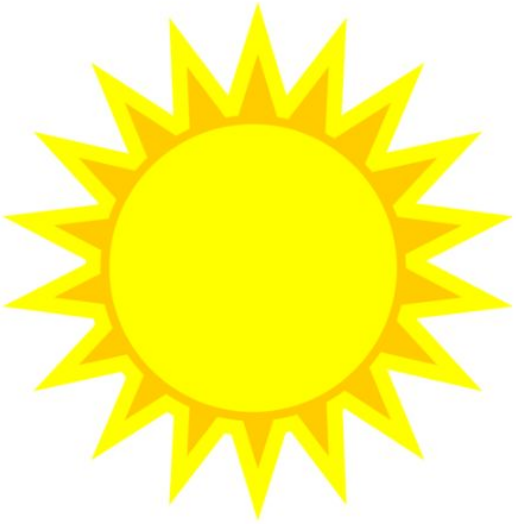
Organism Card Sort



Grasshopper

Florida Scrub Lizard

Wiregrass

Red Shouldered Hawk

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in partnership with the Florida Department of Education's Office of Healthy Schools and Florida's Title IV- Part A Office.

Rock Paper Scissors Food Chain- Warm Up

Objective: to engage students with a "rock-paper-scissors" activity that models a food chain (5 minutes)

Procedure:

1. Explain that we will be playing a game of rock-paper, scissors "Ecosystem" edition! This activity models how energy flows from one organism to the next in a food chain. Students will represent energy moving through a food chain- we will have **Grass**, **Grasshopper**, **Lizard** and **Hawk**.
2. Students will play rock-paper-scissors against one another to "flow" from one trophic level to the next. Each trophic level is represented by these actions or signals:
    a. **Grass: sit**
    b. **Grasshoppers: hop**
    c. **Lizard: walk and stick out tongue**
    d. **Hawk: flap arms.**
3. All students start the food chain as grass, a primary producer. Students will find a partner and sit on the ground. All pairs of students begin to play rock-paper-scissors, best out of 3.
4. The partner who lost the round will remain grass and find another grass to play against. The winner of this round "flows" to become a grasshopper, and hops around looking for other grasshoppers. Two grasshoppers play rock-paper-scissors: the one in each pair who wins "flows" to the next trophic level, a lizard (walks and sticks out tongue). The grasshopper that did not win remains a grasshopper and continues looking for other hopping grasshoppers to play against. If a grass cannot find another grass to play against, the instructor can high-five that student and "flow" to the next level.
5. Players continue to "flow" through the food chain until they become hawks, apex predators. When two hawks play rock-paper-scissors against each other, the winner will "decompose" and the other student will remain a hawk. Anyone who "decomposes" dramatically calls "I'm decomposing!" while holding their hands over their head like a mushroom and slowly sink to the ground. Once a student "decomposes," that student should high five the instructor and can "reset" in same game as grass, begin a parallel game, or cheer on their classmates.