

The Flow of Energy Through a Food Chain

Lesson Goal: Given a food chain diagram, the students will classify organisms by labeling them as either producer, consumer, decomposer, carnivore, omnivore, or herbivore and use arrows to demonstrate energy flow with 80% accuracy.

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Age Group: 3rd Grade

Supplies List:

Materials for Group Activity

- Poster board, markers/crayons, yarn, scissors, glue, coloring pictures of animals (a different set for each of the eight habitats)

Materials for Teacher Modeling

- Poster board, precut pictures of the sun and various organisms from the local habitat that are laminated, dry erase marker, glue, yarn

Materials for Assessment

- Assessment worksheet, pencils

1. Student Prerequisite Skills/Connections to Previous Learning:

Students will need a previous knowledge of:

- Vocabulary/Academic Language
 - Terms: producer, consumer, decomposer, carnivore, herbivore, and omnivore
 - Students are familiar with these terms from prior lessons
- Basic understanding of various animals in different habitats
 - Students are familiar with animals from the various habitats that will be in the lesson
- How to work collaboratively in groups
- How to fill out a KWL chart

The teacher will activate Previous Learning by:

- Using a KWL Chart
 - Through whole class discussion, the students with the teachers help, will fill in a master KWL chart that is displayed on an overhead transparency in regard to what students

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know about producers, consumers, decomposers, carnivores, herbivores, and omnivores.

- The class will work together to fill out the K portion of the chart prompted by the teacher question: “Tell me what you know about what these different organisms eat”.
- The whole class will then participate in filling out the W portion of the chart with things they want to learn in regard to how these organisms interact in their habitats. This will be guided by the teacher to stay on course with the topic.

2. Presentation Procedures for New Information and/or Modeling:

Present Procedures and New Information:

The teacher will start the lesson by reading the displayed objective to students

The teacher will state the purpose of the lesson.

- “The purpose of this lesson is to explore how energy passed through organisms by the production and consumption of food”

The teacher will tell the students the activities they will be engaged in

- The teacher will show a video clip **(Technology Strategy: video clip)** about how energy is passed from the sun to plants and how that energy is then passed on to different organisms through consumption.
- The teacher will explain the concept upon completion of the video
- The teacher will show a graphic depicting what a completed food web looks like

Modeling:

The teacher will build a model of a food chain with the help of the students to demonstrate how the students will build their own in their groups.

- The teacher will have a large poster board displayed in front of the class. There will also be different organisms and a picture of the sun next to the poster board. These laminated pictures will have an area to write with a dry erase marker for labeling.
- The teacher will initiate a discussion regarding the animals in their local area. The modeled poster board will be designed based on this particular habitat
- The teacher will start by placing the sun in its respective place
- The teacher will model how to place the first organism in its place.
- Next, the teacher will ask the students what goes next. The students will be given one minute to come up with an answer. They will then turn to the person sitting next to them and discuss their

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answers. The teacher will call on a student to give their answer **(Active Participation Strategy:**

Think-Pair-Share)

- The teacher will continue on until all pictures have been placed in their respective places
- Next, the teacher will take strips of yarn and connect the organisms to complete the food chain

3. Guided Practice:

- Students will begin working in mixed ability groups of 3 to 4 students **(Grouping Strategy: Heterogeneous Groups)**
 - Students will be pasting pictures of animals in order, labeling them accordingly, and using yarn to demonstrate the flow of energy between each
 - Each group will be given a different habitat to work with
 - The different habitats will be rain forest, grassland, freshwater pond, ocean, desert, arctic, woodland forest, and wetland.
 - Each student will color one to two pictures for their poster depending on group size.
 - The students will then cut out their pictures and get their materials ready for poster assembly
 - Students will then brainstorm how to correctly label each picture as either a producer or a consumer, then as a carnivore, herbivore, or omnivore.
 - Once labeled, each student will be responsible for pasting their picture in the correct spot on the poster board with the input of the others in the group
 - The students will then take turns connecting the animals with yarn and glue to complete their food web
- The teacher will be walking around the room for formative assessment and to guide any students who are struggling
 - The teacher will use words of encouragement and praise
 - The teacher will use questions to guide student groups
 - The teacher will also guide struggling students by reviewing aspects of the model displayed in front of the class
 - The teacher will encourage other students in the group to help come up with the correct responses
- Once students are finished, each group will take turns going in front of the class to explain their poster for their given habitat, this way the students can see an example of all the different habitats
 - The students will each explain their respective part on the project
 - The teacher will ask questions and allow students to ask questions
 - The teacher will use questioning techniques to guide students in any incorrect information given
 - The teacher will answer any questions the students may have

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- Posters will be put away. Teacher's model will be put away. The KWL chart will be closed.
Students will return to their individual seats

4. Independent Student Practice:

- Given a food chain diagram, the students will classify organisms by labeling them as either producer, consumer, decomposer, carnivore, omnivore, or herbivore and use arrows to demonstrate energy flow with 80% accuracy.
- The teacher will restate the objective to the class and explain the directions of the assessment
 - The teacher will go over assessment rules (no talking, looking at others' papers, etc.)
 - The teacher will allow questions about general understanding of the assessment procedure
- The assessment consists of a worksheet with a simple, incomplete food chain (The sun and the organisms will be the only things on the worksheet). The students will have to first label the animal as either a producer, consumer, then as a decomposer, carnivore, omnivore, or herbivore. Next, the students will draw arrows to show the flow of energy starting at the sun then moving through the different organisms **(Assessment Strategy: Formative Assessment)**

5. Culminating or Closing Procedure/Activity/Event:

The teacher will wrap up the lesson by finishing the L portion of the KWL chart

- The teacher will bring the class chart back up on the Smartboard.
- The teacher will ask the students what they learned
- The teacher will call on students as they raise their hands
- The students will tell the teacher what they learned as the teacher writes it down
- The teacher will use this opportunity to clear up any confusion or misunderstanding of the lesson
 - The teacher will not directly say that a student is wrong, rather the teacher will ask other students for their input and use questioning techniques to guide the student to their own correct understanding
- Finally, the teacher will inform the students that, since they have mastered the concept of food chains, they will be moving on to the more complex idea of food webs.

Instructional Strategy (or Strategies):

A gradual release of responsibility method will be used throughout the lesson. The lesson begins with direct instruction during which the teacher will introduce the material and model how to complete the model of a food chain. Next, the lesson will work its way into guided practice. The teacher will have the students work in groups where they will practice the new concepts. The teacher will facilitate this process by observing and guiding when needed. Finally, the students will be given full responsibility as they are asked to complete a formative assessment without the guidance of the teacher.

Differentiated Instruction Accommodations:

- ELL: The following accommodations/differentiations are made for ELL students
 - Subtitles are used for the video clip
 - The teacher will model how to complete a food chain
 - Visuals of animals with labels will be posted during instruction
 - Extra time will be given for the assessment
- Gifted: The following accommodations/differentiations are made for the Gifted and Talented students
 - The teacher will employ higher order thinking questions during group discussion
 - Students who finish the assessment early will be given the opportunity to work on an enrichment worksheet where students can explore a food web. Students will be given an incomplete food web (without arrows and labels) and will be challenged to draw and label using critical thinking skills and the knowledge gained from the food chain lesson

Use of Technology:

The technology that will be used is an interactive Smartboard and a video clip. The interactive Smartboard will be used to complete the whole class KWL chart. This technology will enrich the lesson by allowing all the students to be actively engaged together as a group and to have something to reference throughout the instruction part of the lesson. It will also help the students to activate prior knowledge as a group. The video clip will be used to give a fun and engaging lesson on the principles of a food chain and energy disbursement. The technology will enhance the lesson by adding humor and fun visuals into the lesson. It will help the students to engage in the subject and connect ideas through visuals.

Student Assessment/Rubrics:

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I will know that the students have met the objective when given a food chain diagram, they will classify organisms by labeling them as either producer, consumer, decomposer, carnivore, omnivore, or herbivore and use arrows to demonstrate energy flow with 80% accuracy.

References:

- Arizona State Science Standards, (n.d.). Retrieved from <https://www.azed.gov/standards-practices/k-12standards/standards-science/>
- Food Chains Compilation: Crash Course Kids, Episodes 1.1 and 7.1, (2016). Retrieved from <https://www.youtube.com/watch?v=CZhE2p46vJk>