



FOOD CHAIN FLEXIGON

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Grade level: 6+

Subject Areas: Language, Fine Arts, Science

Theme: Using a craft activity to discuss food chains and brainstorm examples

Goal: Open dialogue that explores diversity in marine food chains/webs

Initial Questions:

What is a food chain? What is a food web? What is an example of a food chain with four trophic levels?

The Lesson

Materials Required:

- Template (provided below)
- Paper
- Drawing or colouring materials
- Scissors
- Tape

Useful Materials

- Example of end produce
- Guidebook on local marine life
- Online direction at <http://www.arvindguptatoys.com/toys/flexagon.html>

Introduction Discuss food chains and use your Seaquarium to brainstorm examples. Get each student to create a food chain with 4 trophic levels.

e.g. plankton < cockle clam < dungenness crab < giant pacific octopus

Body Use template or online video to create your flexagon. Be sure to draw and label your 4 trophic levels *before* folding!

Closing Allow students time to discuss their folding food chain with each other

Template

The template consists of 24 square sections arranged in a 4x3 grid. Each section contains the following instructions:

- 1) Fold dotted lines
- 2) Flip over
- 3) In this section draw [TROPIC LEVEL 1, 2, 3, or 4]

The sections are labeled with their respective trophic levels: TROPIC LEVEL 1, TROPIC LEVEL 2, TROPIC LEVEL 3, and TROPIC LEVEL 4. The right side of the template includes a list of 9 steps for assembly and a diagram of the final flexagon.

- 1) Cut on the solid line to cut out your three squares
- 2) For all three squares:
 - a) Fold on the small dashed line (folding towards you) and then unfold.
 - b) Flip the square over and draw the correct trophic levels in the diamond and triangle spaces (as stated on the opposite side)
 - c) Fold both ways on the large dashed line
- 3) Tape the three squares together so that the lines and typed print are on the inside. Use the circles, squares, and triangles as a guide.
- 4) Fold trophic level 4 over so from the top the sheets look like this:


- 5) Push the three triangles of trophic level 4 into the centre of the tube, utilizing the pre-folds
- 6) Flip over the tube and repeat steps 4 & 5
- 7) You may now switch to the next trophic level by pushing the centre of the current trophic level where all three triangles meet
- 8) Do this until you get to trophic level 4- tape the split down the middle
- 9) You may now freely rotate through the trophic levels by pushing on the centre of the current trophic level where all three triangles meet

To watch a helpful video and see the end product, go to:
<http://www.bitreels.com/geek/how-to-create-a-paper-toy-your-brain-won't-comprehend/>

Example: Dead/Decayed/Feces/Nutrients < Algae/Seaweed < Urchins < Seastars



Background Information

Every living thing needs food! A **food chain or a food web** illustrates the **energy flow** from one living thing to another! We can start to understand how different animals are connected to each other and to their environment by looking at their position in the food web.

We use the term **trophic level** to describe the number of 'steps' an organism is from the start of the food web. There are 4 trophic levels (TL):

TL 1 – **Primary Producers**: plants, algae

- Start of the food chain
- These organisms convert non-living sources of energy (e.g. sunlight) into organic energy

TL 2 – **Primary Consumers**: herbivores such as limpets, chitons, snails

- Eats primary producers aka animals that eat plants or algae
- They are herbivorous animals

TL 3 – **Secondary Consumers**: small carnivores such as fish, crabs, sea stars

- Eats primary consumers
- They are small carnivorous animals (meat eaters)

TL 4: **Tertiary Consumers**: larger carnivores such as large fish, sharks, otters

- Eats secondary consumers - eat other carnivores
- They are larger carnivorous animals

Decomposers are often left off the food web, but they play a vital role in the ecosystem. They feed on and **break down dead organisms** into essential nutrient that are used by primary producers (e.g. in the soil). Decomposers include bacteria and fungi. They could also be used to mark the end of a food web.