

Lesson Plan 4

Food Chains

CRITICAL OUTCOMES

CO #2: Work effectively with others as members of a team, group, organisation, community.

CO #3: Organise and manage oneself and one's activities responsibly and effectively.

CO #5: Communicate effectively using visual, mathematical and/or language skills in the modes of oral and/or written presentation.

LEARNING OUTCOMES

LO #2: The learner will know and be able to interpret and apply scientific, technological and environmental knowledge.

Process Skills:

Following Directions

Classifying

Communicating

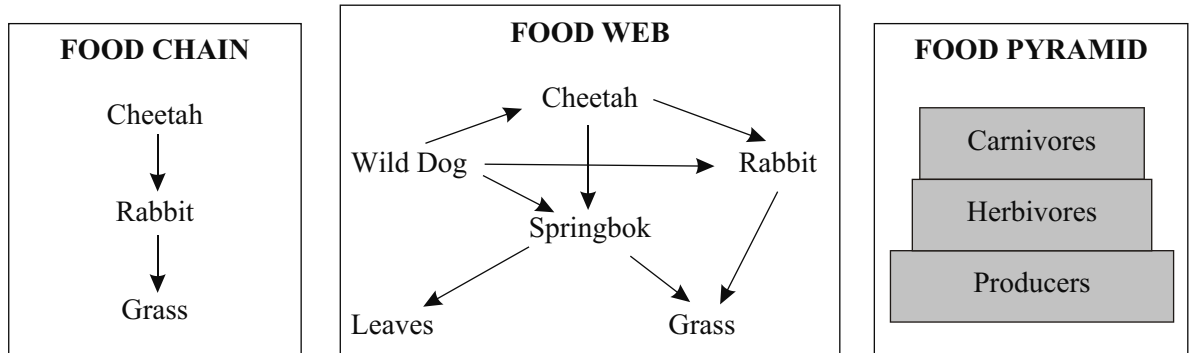
ASSESSMENT STANDARDS

Recalling meaningful information when needed

Categorising information to reduce complexity and look for patterns

TEACHING THE LESSON

Review the food chain background information found on page 24 then explain the concepts to students using the diagrams below.



(arrows indicate what organism preys on another organism, if wanting to show the flow of energy through the system reverse the direction of the arrows)



ACTIVITY 1

Use the Food Chain Picture Page, cut out the pictures and paste them on separate pages under the appropriate headings of Producer, Primary Consumer/Herbivore, Secondary Consumer/Carnivore. Alternatively you could hand out the pages to groups of students and have them write down the headings on a sheet of paper, filling the names of the animals shown on the sheet under the appropriate heading. The students hand in the Picture page after the activity allowing you to reuse them for the next group.



ACTIVITY 2 - food chain

Use the Food Chain Picture Page handout. Divide the class into three groups. Each group must use the pictures on this page to form a food chain and food web. Each group is then given an opportunity to present to the class explaining why they used the pictures they did. (alternatively they can just write the names of the organism down in a diagram as above allowing you to reuse the Picture Page)



ASSESSMENT

Checklist for food chain and food web (activities 1 & 2):

Assessment Statement	Cross / Tick
Diagrams are clearly labelled	
The organisms are placed in a logical sequence	
The arrows are showing the correct direction	
The students could clearly explain to the class why they chose the sequence they did	



ACTIVITY 3 - assemble a food pyramid

Have each learner bring in an empty soda can and pictures from magazines of plants, antelope, dogs, cats etc (ie examples of producers, herbivores and predators) prior to the lesson. Or alternatively hand out the Food Chain Picture Page for the learners to cut out and use pictures. Break the class into groups of six students with one Food Chain Picture Page and six cans per group. Briefly explain the concepts of food pyramids to the learners. Then ask them to assemble a food pyramid of their own using the cans and pictures. Each pyramid should have a base of three cans each with a producer, the second level should consist of two cans with herbivores and one can with a carnivore on top. Let each group present their food pyramid to the class, describing the kinds of organisms that are a part of their food pyramid and they ways they depend upon each other for energy. Groups should use the words: producers, herbivores, carnivores and understand the energy flow through the pyramid. As an entire class, construct one giant pyramid from each groups' pyramids. Discuss the importance of maintaining balance in habitat. If one can is removed from the pyramid the whole system weakens or collapses. Stress the importance of each individual animal to the natural world.



ASSESSMENT

Assessment Rubric for Food Pyramid:

1	2	3	4
Learners showed no understanding/recall of information in the building of their pyramid or presentation.	Learners were mostly correct in their classifications showing some lack of recall of information discussed.	Learners could correctly recall information necessary to build the pyramid, correctly classifying the animals.	Learners showed a deeper understanding of the pyramid built. The pyramid was built accurately with correct classifications.

Language links:

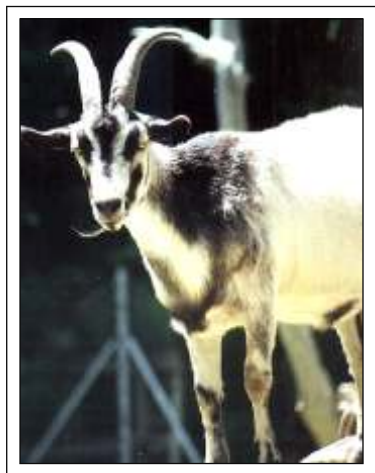
These activities can be used to assess the following language outcomes.

LEARNING OUTCOME	ASSESSMENT STANDARD
LO2: Speaking	Uses interactive skills and strategies for working in groups
	Uses appropriate body language and presentation skills





FOOD CHAIN PICTURE PAGE



BACKGROUND - food chains

Cats and the Energy Cycle:

The speed of a cheetah and the strength of a lion aid them in catching their prey. Big cats are predators and play an important role in the energy cycle, fitting in with the overall balance of life. Every animal needs to get its energy from somewhere, food chains illustrate where a plant or animal gets its energy from within its habitat. A single food chain does not show all the sources of energy for an organism, merely examples. A food web, which is more complicated, takes into account all sources of energy between organisms within a given habitat. Therefore one can say that it is a compilation of all the food chains within a habitat.

How does Energy Cycle work?

The sun is the source of energy within a food chain or web. Plants, one of the few organisms on earth that can transfer the sun's energy to make their own food, are called **producers**. The producers therefore support all other life on earth, whether directly or indirectly. **Herbivores** (primary consumers) are the next step in the energy cycle, they consume only plants in order to get their energy. Herbivores include giraffe, antelope, many rodents, sheep, goats and cattle and are specially adapted to gathering, grinding and digesting plants. Some concentrate on only parts of the plants such as leaves, seeds, bark and / or roots. The next step in the energy cycle is the **carnivores** (secondary consumers). Carnivores are those animals that eat only other animals in order to get energy and include cats, dogs, birds of prey, sharks and some snake species. **Omnivores** are designed to obtain energy from a variety of sources, both animal and plant. Some examples of omnivores are pigs, porcupine and badgers. When plants and animals die, the energy still contained within their bodies is fed on by scavengers, beginning the process of decomposition. Other organisms known as **decomposers** (insects, fungi and bacteria), recycle dead organisms back into nutrients and soil. The energy cycle then begins anew as the plants then use the nutrients and soil to grow. Thus the food web is the cycle of energy through a habitat.

Did you know?
Carnivores eat only other animals

While food chains and food webs depict energy interrelationships, food pyramids show the relative amounts of producers, herbivores and carnivores within a habitat. Plants are the most numerous organisms they have a permanent source of energy in the sun. Producers collectively weigh the most and hold the most energy, thereby forming the base of the food pyramid. Herbivores form the next level on the food pyramid as they obtain their energy directly from the producers. Due to the fact that energy is lost at each step of the pyramid, there will always be less herbivores than producers and less carnivores (the top step of the pyramid) than herbivores. Energy is lost at each step as some is not consumed, some is not digested and some is used to carry out bodily processes.

Why are these relationships so important?

Food webs and pyramids stress the important role of every creature through illustrating the interdependencies that exist in nature. Remove a part of the web or pyramid and the balance of nature will break. Each component depends on the other in the cycle of energy.

