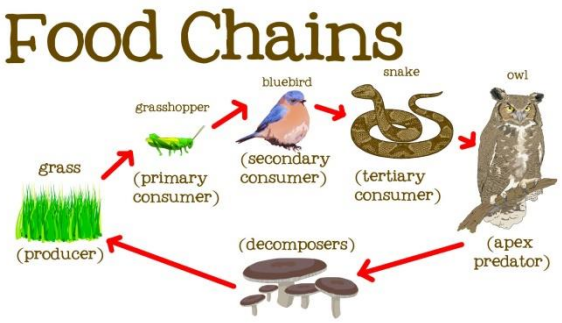
BASIC 8

WEEKLY LESSON PLAN – WEEK 2

Strand:	Systems		**Sub-Strand:**	Ecosystem	
Content Standard:	B8.3.3.1 Demonstrate an understanding of the interdependence of organisms in an ecosystem and their interaction				
Indicator (s)	B8.3.3.1.1 Explore the feeding relationships within an ecosystem		**Performance Indicator:** Learners can differentiate between food chain and food web.		
Week Ending	19-01-2024				
Class	B.S.8	**Class Size:**		**Duration:**	
Subject	Science				
Reference	Science Curriculum, Teachers Resource Pack, Learners Resource Pack, Textbook.				
Teaching / Learning Resources	Poster, Chart, Pictures, Video		**Core Competencies:**	• Critical Thinking and Problem Solving • Communication and Collaboration • Digital Literacy • Creativity and Innovation	

DAY/DATE	**PHASE 1 : STARTER**	**PHASE 2: MAIN**	**PHASE 3: REFLECTION**
MONDAY	Assist Learners to explain keywords and terminologies in the lesson. **Terminologies;** • Planetary • Ecosystem • Atmosphere • Volcanic • Gravitational • Sun • Thermodynamics • Electromagnetic • Radiation	1. Discuss with the Learners about the meaning of the concept “Ecosystem”. 2. Learners brainstorm to identify the importance of sun. 3. With the aid of YouTube videos, explain the feeding relationships in an ecosystem. A **producer produces** their own organic molecules while the consumers get organic molecules by consuming others. ***Explanation:*** The **food chain** is a sequence of organisms that basically show who gets the organic nutrients by consuming other organisms.  **Producers**	Through questions and answers, conclude the lesson. **Exercise;** 1. What is Ecosystem? 2. Explain the feeding relationships in an ecosystem.

		also known as autotrophs or self-feeders they *produce* their own organic molecules like carbon, essentially feeding themselves. there are two types of autotrophs: photoautotrophs and chemoautotrophs a photoautotroph uses sunlight to create their organic molecules (ex: plants) a chemoautotroph uses chemicals to make their organic molecules (ex: hydrogen sulfide-oxidizing bacteria) Heterotrophs also known as other-feeders or consumers they can't make their own organic molecules so they have to get it by eating others like producers there are many types of consumers: primary, secondary, tertiary, and quaternary **Primary consumers**: usually are herbivores and eats producers **Secondary consumers**: usually are carnivores and eats primary consumers **Tertiary consumers**: usually are carnivores and eats secondary consumers Quaternary consumers: are at the top of the food chain and eats tertiary consumers. They are also known as apex predators	
THURSDAY	Discuss with the Learners about the meaning of the concept "Energy transfer" in ecosystem.	1. Assist Learners to differentiate between "Food Chain" and "Food Web". 2. Using a Chart, explain the types of food chain. 3. Learners brainstorm to explain the difference and relationship between producer, primary consumer, secondary consumer in food chain. **Producer:** In the ecosystem, the green plants are known as producers. **Secondary consumer:** If the animals eat other animals which in turn eat the plants, they are called secondary consumers. Primary consumer: If the animals feed on the producers, the plants are called primary consumers.	Reflect on the difference between food chain and food web. **Exercise;** Explain the following; i. Producer ii. Secondary Consumer iii. Tertiary Consumer

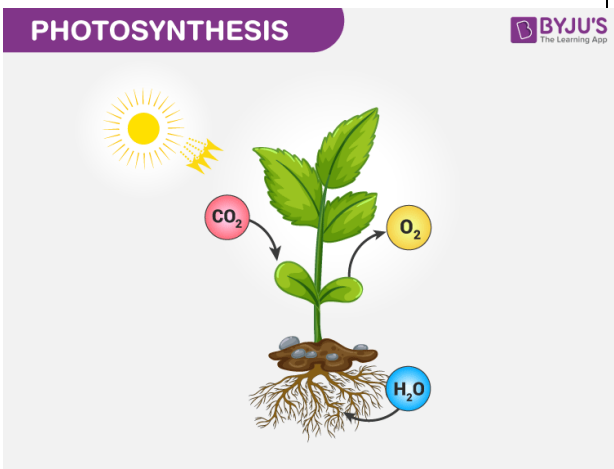
		Tertiary consumer: The animal at the highest level of the food chain which eats other animals is known as tertiary consumers.	
		Producer / **Secondary consumer** / **Primary consumer** / **Tertiary consumer** They produce their own food. / They depend on the primary consumers. / They depend on producers. / They depend on either primary consumers or secondary consumers for food. They are autotrophs. / They are carnivoroes or omnivores. / They are herbivores. / They are apex predators. They have the greatest amount of biomass. / They have a medium amount of biomass. / Have the highest amount of biomass. / They have the lowest amount of biomass.	
FRIDAY	Review Learners knowledge on the previous lesson.	1. Demonstrate using a diagram how energy from the sun flows through a food chain and food web in an ecosystem. 2. Learners brainstorm to identify 5 importance of energy flow in ecosystem. 3. Assist Learners to identify the law of energy flow. 4. Using a Poster, explain the trophic levels in ecosystem. **Energy Flow** The chemical energy of food is the main source of energy required by all living organisms. This energy is transmitted to different trophic levels along the food chain. This energy flow is based on two different laws of thermodynamics: • First law of thermodynamics, that states that energy can neither be created nor destroyed, it can only change from one	Through questions and answers, conclude the lesson. **Exercise;** 1. Explain “Energy flow” in ecosystem. 2. State 5 importance of energy flow in ecosystem.

form to another.

- Second law of thermodynamics, that states that as energy is transferred more and more of it is wasted.

Energy Flow in Ecosystem

The energy flow in the ecosystem is one of the major factors that support the survival of such a great number of organisms. For almost all organisms on earth, the primary source of energy is solar energy. It is amusing to find that we receive less than 50 per cent of the sun's effective radiation on earth. When we say effective radiation, we mean the radiation, which can be used by plants to carry out photosynthesis.



Most of the sun's radiation that falls on the earth is usually reflected back into space by the earth's atmosphere. This effective radiation is termed as the Photosynthetically Active Radiation (PAR).

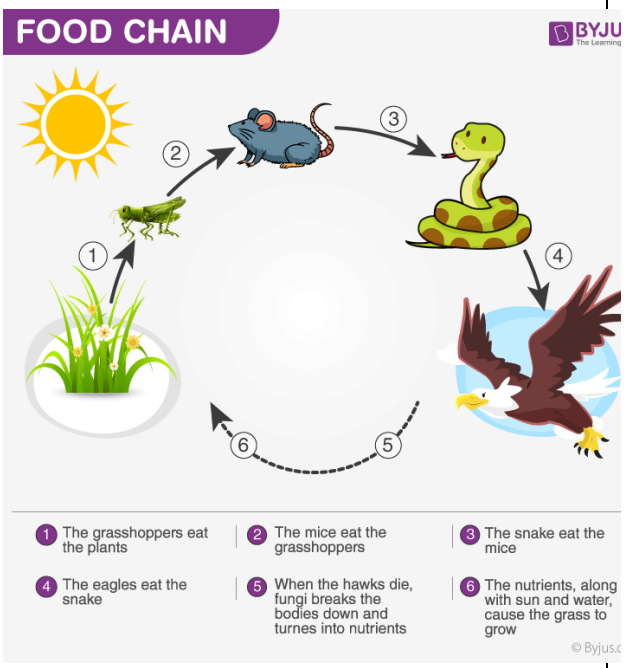
Overall, we receive about 40 to 50 percent of the energy having Photosynthetically Active Radiation and only around 2-10 percent of it is used by plants for the process of photosynthesis. Thus, this percent of PAR supports the entire world as plants are the producers in the ecosystem and all the other organisms are either

		directly or indirectly dependent on them for their survival. The energy flow takes place via the food chain and food web. During the process of energy flow in the ecosystem, plants being the producers absorb sunlight with the help of the chloroplasts and a part of it is transformed into chemical energy in the process of photosynthesis. This energy is stored in various organic products in the plants and passed on to the primary consumers in the food chain when the herbivores consume (primary consumers) the plants as food. Then conversion of chemical energy stored in plant products into kinetic energy occurs, degradation of energy will occur through its conversion into heat. Then followed by the secondary consumers. When these herbivores are ingested by carnivores of the first order (secondary consumers) further degradation will occur. Finally, when tertiary consumers consume the carnivores, energy will again be degraded. Thus, the energy flow is unidirectional in nature. Moreover, in a food chain, the energy flow follows the 10 percent law. According to this law, only 10 percent of energy is transferred from one trophic level to the other; rest is lost into the atmosphere. This is clearly explained in the following figure and is represented as an energy pyramid. **Trophic level** The producers and consumers in the ecosystem can be arranged into different feeding groups and are known as trophic level or the feeding	

level.

1. The producers (plants) represent the first trophic level.
2. Herbivores (primary consumers) present the second trophic level.
3. Primary carnivores (secondary consumers) represent the third trophic level
4. Top carnivores (tertiary consumers) represent the last level.

Food Chain



There are basically three different types of food chains in the ecosystem, namely –

- **Grazing food chain (GFC)** – This is the normal food chain that we observe in which plants are the producers and the energy flows from the producers to the herbivores (primary consumers), then to carnivores (secondary consumers) and so on.
- **Saprophytic or Detritus food chain (DFC)** – In this type of food chain, the dead organic matter occupies the lowermost level of the food chain, followed by the decomposers and so on.
- **Parasitic food chain (PFC) –** In this type

		of food chain, large organisms either the producer or the consumer is exploited and therefore the food passes to the smaller organism.	

Name of Teacher: **School:** **District:**