



Ocean World Lesson Five

Where does our food energy come from?

Content: Food chains in the Ocean, photosynthesis, seagrass, predators, prey, Importance of the Sun, producers, herbivores, omnivores, carnivores. Literacy, Communication, Artwork



Teachers' Resources

'Ocean World'

KS2 - Year 4,5.6 - UK Curriculum: Science

Lesson Five

'Where does our food energy come from?'

Resources in this unit are:

- 1.Ocean World Powerpoint (19 slides.)
- 2.Worksheets: 5a, b, c, d1, d2, e, f (7)
- 3.Everything you need to teach photosynthesis, seagrass, predators, prey, food chains, importance of Sun, producers, herbivores, omnivores, and carnivores,
4. Activity Sheet Guide for teachers, includes key words, ideas and literacy work.
5. A list of 'sea music' is also included for use throughout the eight-lesson project.
- 6.The BIG Question (pupils are encouraged to discuss and/or write a sentence to answer - The BIG question: - 'Where does our food energy come from?'

Teachers can establish pupil progress when discussing with pupils what they have learnt so far. It is suggested that work can be glued into a BIG BOOK/JOURNAL where pupil's work can be built up over the full teaching unit of 8 lessons.

All lessons are flexible - so spend a whole day on the lesson, or one section a day or one a week to suit your Geography/Science time slot.

*All materials (c) gloria barnett
The Weird Fish Lady*



Where does our food energy come from?

Resources:



5: Food Chains in the Ocean



Info Sheets:
5a,b,c,d,e,f



Cut and Paste
Display Work
Artwork

Suggested Activities:



**A: Teacher led discussion – Use PPT 5:
“Food Chains in the Ocean”**

Discussion:

Show and discuss the whole presentation as an overview of **Activity 5 OR.....**



B:break the presentation down into the 8 parts

B1 - Teacher led activities (Slides 2 – 4) All animals need Energy; energy comes from the Sun. Lead discussion. Use Info Sheet 5a (Simple food chain)
Groupings: Pupils to discuss what they have learnt from the Power Point slides and add to their individual Project Files.

B2 - (Slides 5 - 7)

Lead discussion on Photosynthesis

Use Info Sheet 5b (See the differences between Seagrass (the only plant in the Ocean) and Algae (Not a plant). Pupils to discuss what they have learnt from the Power Point slides and add to their ‘Learning Journal’.

B3 - (Slide 8)

Who Eats Who? Question.

Lead discussion on who eats who.

Pupils to decide on order of food chain.

B4 - (Slide 9)

Who Eats Who? Answer:...

Then question: How do we show who eats who?

B5 - (Slide 10)

Completing Food Chains

Lead discussion - Answer to slide 9 – Arrows (note the direction they are moving; and question. What’s missing?

B6 - (Slides 11–12)

Answer to Slide 10 – **the Sun**; Importance of Sun. Lead discussion.



B:break the presentation down into the 8 parts

Continued. . .

Continued. . .

B6 - (Slides 11–12) – The importance of the Sun.

Lead discussion - Answer to slide 10.

B7 Slides 13 – 16) – Introducing new words

Producers, Herbivores, Omnivores, Carnivores in the Ocean.

Use Info Sheets 5c, 5d, (Understand herbivores, omnivores and carnivores)

Lead discussion and understanding of Info Sheets 5c, 5d

B8 Slide 17 – 18 - Food Chains: Lead discussion.

Pupils should be able to construct a food chain from the images of Ocean creatures



C: Pupils to Consolidate their Learning

Literacy activity. Use Info Sheet 5e; Who eats who in the Ocean?



D: Teacher Led activity using Info Sheet 5f

Pupils to be led through discussion of mathematics of populations of animals. Ask why there more creatures at the bottom of the Food Chain are than at the top. (Ans: if there were less – they would all get eaten – and the food chain would stop – everything would starve). Simple ideas at KS2 – expanding using knowledge of Maths and Science at KS3.



E: Pupil's Display Work

This activity lends itself to building a display. Use Info Sheet 5d



F: Literacy and Communication Skills

Key Facts:

a) Oceans provide more oxygen than any other source

Oceans produce 50% - 80% of oxygen on Earth. Rain Forests produce 20% of Earths oxygen.

b) Plankton is an algae



F: Literacy and Communication Skills

Continued. . .

- c) Plankton is the major converter of sunlight energy to food energy
- d) They use photosynthesis to do this.
- e) Algae also produces between 50% - 80% of all oxygen on Earth
- f) The oxygen is a waste product of photosynthesis
- g) Without algae there would not be enough food or oxygen for life to exist.

Oral Skills and confidence can be developed with discussion & constructive argument on importance of facts (e.g. Algae in the Ocean produces more oxygen than plants in rain forests).



G: Artwork

Paint pictures of food chain creatures on individual paper plates and thread them on a string in order



H: Teacher to put Key Words on the board

PLANKTON ENERGY PHOTOSYNTHESIS OXYGEN ALGAE



I: Literacy and Communication Skills

- Pupils to write sentences about food chains using these key words
- Update the 'Learning Journal'

Extension: Find out the full chemical equation for photosynthesis.

Research:

- When we eat food, we get energy for our bodies to work.
- We need to have energy to breathe, move, make our senses work, and grow.
- The energy in food is a chemical energy made from glucose. Find out more about glucose.
- Which makes the most glucose – plants in the rain forests or plankton (algae) in the oceans.
- Find out all the statistics – the numbers – the full facts!



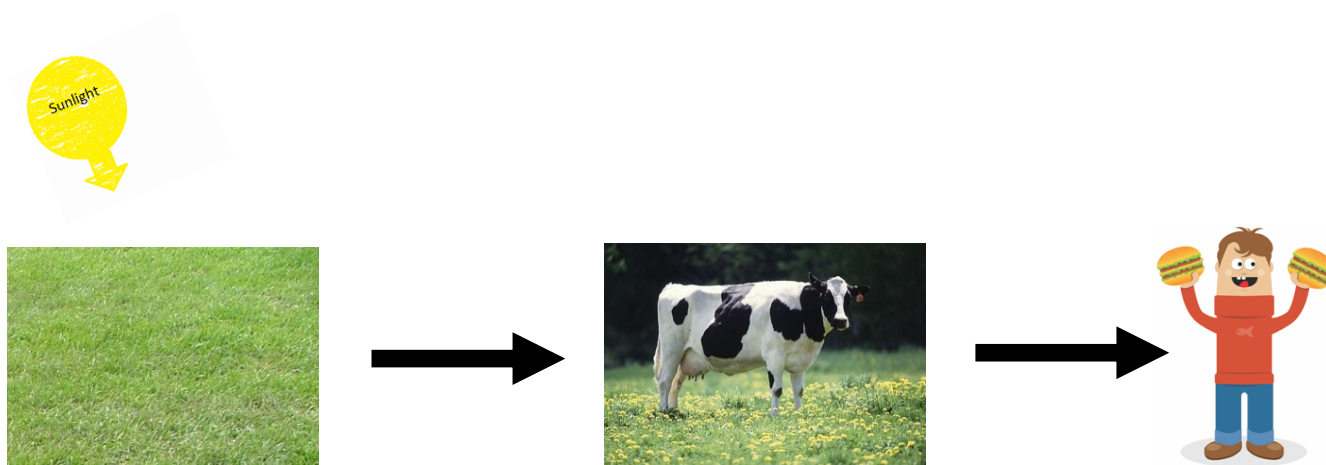
J: Answer the Big Question

Where does our food energy come from?

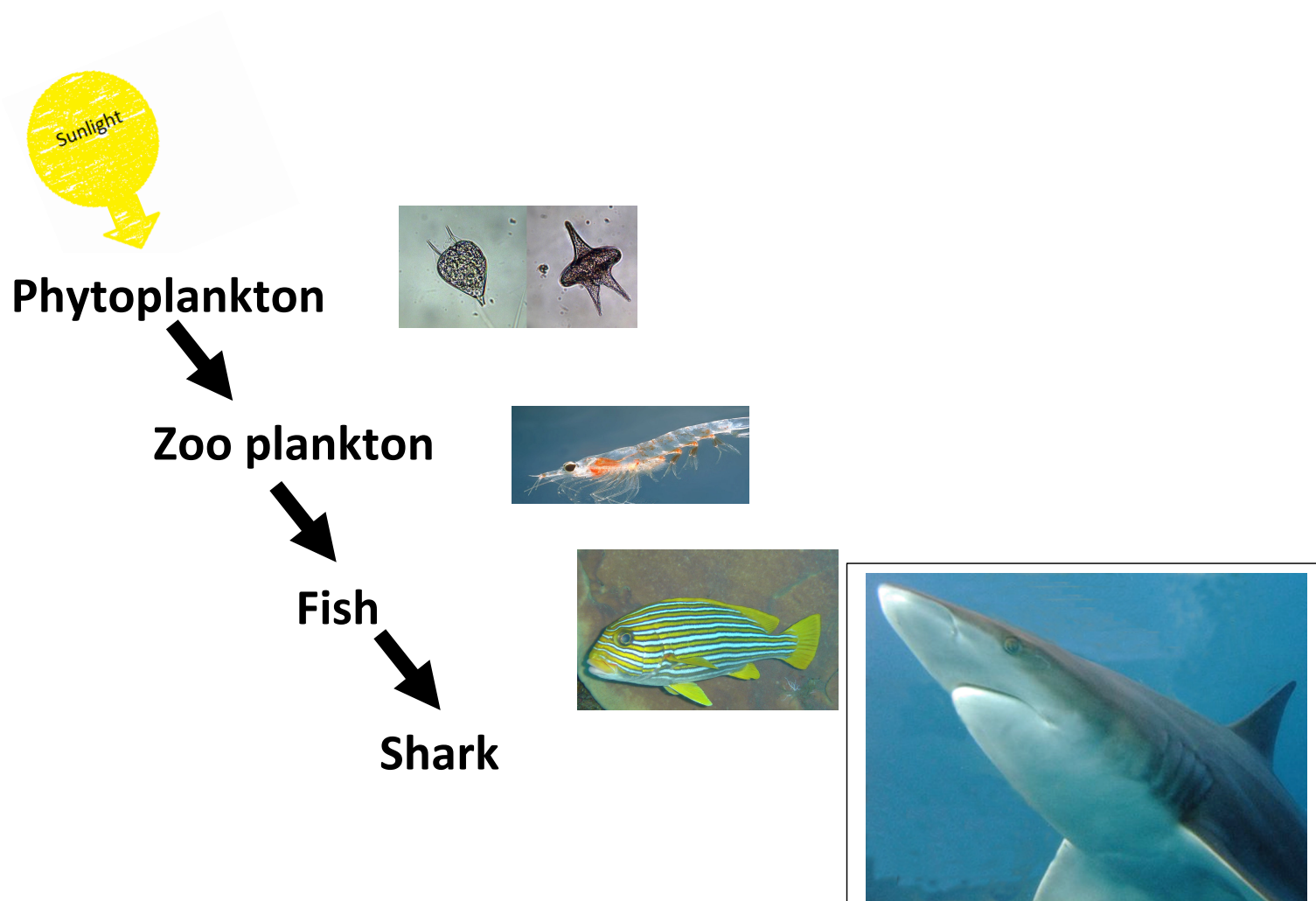
The answer is.....?

Food Chains

1. A food chain on land



2. A food chain in the Ocean



Plants in the Ocean

We know that green plants on land make energy from the Sun, but what happens in the oceans?

Not all the green things that live in oceans are plants.

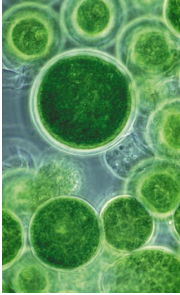
Seagrass is the **only plant** that lives in the oceans. There are other living things in the oceans that are green such as types of seaweed which belong to the ‘algae’ family of living things.

Algae is NOT a plant. Algae make their own food from the light of the Sun.

There are different types of seagrass in different parts of the world.

Algae is not a plant

Algae can be very small – and only seen as tiny dots living inside coral.



Algae can live together and look like green carpets on the sea bed.

Some algae can grow very large like these Giant Seaweeds.



Seagrass is a plant

Seagrass can be a nursery for baby fish to grow safely away from predators



Seagrass is a good supply of food for large herbivores, such as this Dugong.



Carnivores, Omnivores and Herbivores in the Ocean

Carnivores eat other animals



Can you name all these marine carnivores? You should be able to find a seal, shark, penguin, moray, dolphins and a black trevally fish. Do you know which is which?

Omnivores eat algae and other animals



Turtle

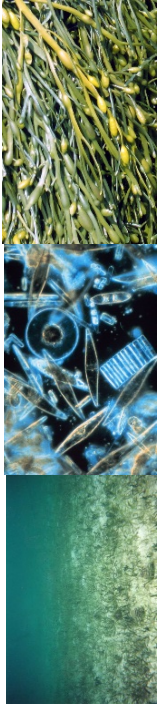


Blue Trigger Fish

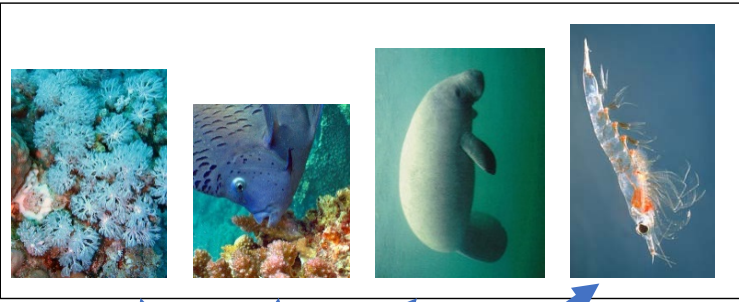
Herbivores eat algae or seagrass

- 1.Coral live on the reef and take algae from the water as it floats by.
- 2.Fish dig out the algae from between hard coral structures.
- 3.Manatees eat seagrass.
- 4.Krill are tiny shrimps that eat small algae from the water.

Seagrass is the only real plant in the Ocean
Algae is very common in the Ocean and can be found as plankton, and seaweed. Plankton is very small, but seaweeds can be giant structures.



Seagrass Plankton (algae) Seaweed (algae)



If an animal doesn't move around it is probably a herbivore.
Are these animals herbivores or carnivores?



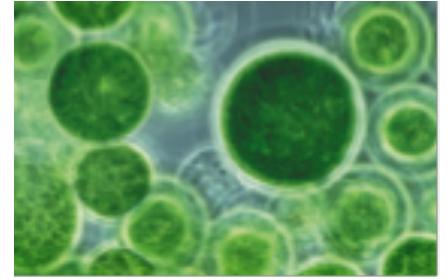
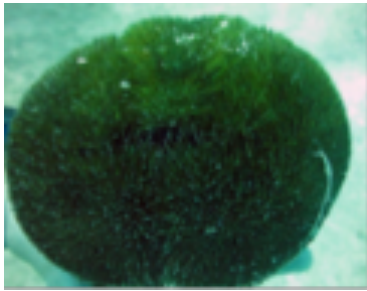
Giant Clam



Napoleon Wrasse

Producers

Algae



Seagrass



Herbivores



Anemone Fish



Masked Butterfly



Sea Star



Sea Slug



Dugong

Omnivores



Turtle



Trigger Fish

Carnivores



Shark



Moray Eel



Lionfish



Dolphins

Who Eats Who in the Ocean?

1. Look at the image cards 5d1 and 5d2 which sort out the creatures into producers, herbivores, omnivores and carnivores.

2. Write one sentence each to explain the words:

- producer
- herbivore
- omnivore
- carnivore

3. Write out a food chain:

Put the word sunlight at the beginning of your food chain and **an arrow** going from the Sun to the producer. Then choose some animals from the image sheet to put in the chain.

4. Write underneath the names of the animals, then label each one with one of these words; producer, herbivore, omnivore and carnivore.

5. Write a sentence to explain why SUN should be at beginning of the food chain.

6. Remember to put arrows between all the animals with the arrow going to the animal who is getting energy from the food it is eating. (The arrow represents the energy moving from one animal to the next.)

How Many Animals in a Food Chain?

There needs to be large numbers of small creatures to feed the larger creatures on the next level. Animals get bigger – but the **number** of animals in each level get smaller as the ‘pyramid’ grows. This is because larger animals need lots of smaller animals to eat.

Convert a food chain into a picture like the one below and give an estimate of the numbers of the animals on each level. Use squared paper to help show your pyramid more accurately.

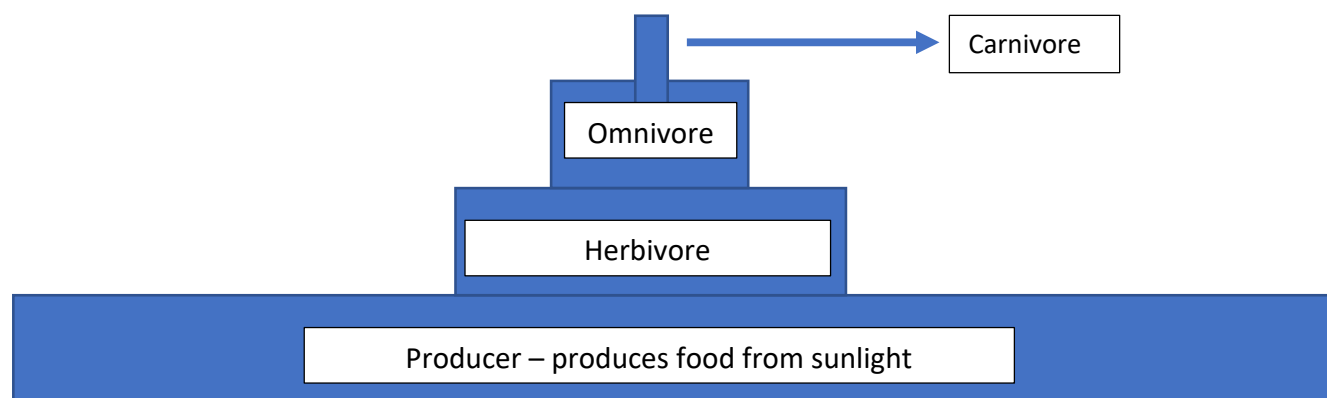
An example of numbers in a Sea Food Chain is:

Producer – Plankton (or Algae) – 200 animals

Herbivore – Jellyfish – 20 animals

Omnivore – Lionfish – 4 animals

Carnivore – Moray Eel – 1 animal



1	The Mystic	Van Morrison
2	Yellow Submarine	The Beatles
3	https://www.youtube.com/watch?v=GHgE5fQxvW8	
4	The Hebrides (Fingal's Cave http://www.bbc.co.uk/programmes/articles/3Fm3H66YnxNZsLLrSX3mMvh/top-six-sea-pieces	Felix Mendelsohn
5	La Mer	Debussy
6	Sea Fever	John Ireland
7	Storm	Benjamin Britten
8	The Flying Dutchman	Richard Wagner
9	Octopuses Garden	Beatles
10	Under the Sea	Little Mermaid
11	Hawaii Five-O	The Ventures
12	Shark Attack	John Williams
13	Wipe Out	The Safaris
14	Sittin' on the Dock of the Bay	Ottis Reding
15	Pirates of the Caribbean	Any
16	Sparticus (Onedin Line Theme)	Kachaturian
17	Preservation / Kyance Cove / Marazion	Keynvor
18	The Aquarium: Carnival of the Animals	Saint -Saens

Ideas to enhance this Lesson ...

Buy '*The Amazing World Beneath the Waves -Guide to the Oceans*' or the '*50 Facts*' Books for your classroom from the book section on www.barnettauthor.co.uk

