

Applicable standards

National Curriculum for England Key Stage 2

KS2 Science		Lessons							
Element of the Science Programme of Study		1	2	3	4	5	6	7	8
Year 4 Living things and their habitats									
<ul style="list-style-type: none"> Recognise that living things can be grouped in a variety of ways. 					✓				
<ul style="list-style-type: none"> Explore and use classification keys to help group, identify and name a variety of living things in their local and wider environment. 					✓				
<ul style="list-style-type: none"> Construct and interpret a variety of food chains, identifying producers, predators and prey. 						✓			
<ul style="list-style-type: none"> Recognise that environments can change and that this can sometimes pose dangers to living things. 								✓	
<ul style="list-style-type: none"> Explore examples of human impact (both positive and negative) on environments, for example, the positive effects of nature reserves, and the negative effects of population and development. 								✓	
Year 5 Living things and their habitats									
<ul style="list-style-type: none"> Study the ocean as a comparative habitat to the local area. 		✓	✓						
<ul style="list-style-type: none"> Describe the differences in the life cycles of a mammal, an amphibian, an insect and a bird. 				✓					
<ul style="list-style-type: none"> Observe and compare the life cycles of plants and animals in the local environment with other plants and animals in the oceans. 				✓					
Year 6 Living things and their habitats									
<ul style="list-style-type: none"> Describe how living things are classified into broad groups according to common observable characteristics and based on similarities and differences, including micro-organisms, plants and animals. 					✓				
<ul style="list-style-type: none"> Give reasons for classifying plants and animals based on specific characteristics. 					✓				
Year 6 Evolution and inheritance									
<ul style="list-style-type: none"> Identify how animals and plants are adapted to suit their environment in different ways and that adaptation may lead to evolution. 						✓			
Years 3 & 4 Working scientifically									
<ul style="list-style-type: none"> Identifying differences, similarities or changes related to simple scientific ideas and processes. 					✓	✓	✓		
<ul style="list-style-type: none"> Using straightforward scientific evidence to answer questions or to support their findings. 								✓	✓

Applicable standards

National Curriculum for England Key Stage 2

KS2 Science (continued)	
Element of the Science Programme of Study	Lessons 1 2 3 4 5 6 7 8
Years 5 & 6 Working scientifically <ul style="list-style-type: none">• Examples of scientists using enquiry to answer questions.• Reporting and presenting findings from enquiries, including conclusions, causal relationships and explanations of and a degree of trust in results, in oral and written forms such as displays and other presentations.	<div>✓</div> <div></div> <div></div> <div></div> <div></div> <div></div> <div></div> <div>✓</div> <div>✓</div>

KS2 English	
Element of the English Programme of Study	Lessons 1 2 3 4 5 6 7 8
Years 5 & 6 Spoken English <ul style="list-style-type: none">• Students give well-structured descriptions, explanations and narratives.• Students speak audibly and fluently with an increasing command of Standard English.• Students participate in presentations.• Students gain, maintain and monitor the interest of the listeners.	<div></div> <div></div> <div></div> <div></div> <div></div> <div></div> <div></div> <div>✓</div> <div>✓</div> <div>✓</div> <div>✓</div>

SCHEME OF WORK

Lesson 1: Coral explorer

Overview

This lesson introduces students to the wonders of the coral reef and the adventures of the XL Catlin Seaview Survey. In this first lesson, students will embark on their journey to become coral explorers, finding out where coral reefs can be found, and learning from the experiences of scientists and the expedition team. They will then take part in their first virtual dive. This lesson provides the platform for further scientific discovery through the rest of the unit.

Learning outcomes

- Consider what it would be like to be a coral explorer
- List important facts about the oceans
- Identify the main features of the coral habitat
- Use dance (and song) to remember the common dive signs used by scientists
- Reflect on the wonders of the coral reef

Resources



Slideshow 1:
Coral Explorer



Student Sheet 1a:
Video reflection

Student Sheet 1b:
Dive signs

Student Sheet 1c:
Dive log



Activity:
Dive signs

Activity:
Animal dive signs



Diagram:
Agincourt Reef Google Maps



Video:
Setting Sail



Gallery:
Dive signs

Lesson 2: Reef builders

Overview

For teachers wishing to bring a hands-on and creative element to the unit, this lesson provides the template for building a reef in your classroom and can act as the basis for future lessons. Rather than a traditional lesson, these resources describe two possible ways of making your own reef in the classroom: reef-in-a-box and a reef mural. Depending on the time, you have available, you can either use one or both of these approaches over the course of the unit.

Learning outcomes

- Describe how the tiny coral animal makes the reef
- Identify a range of living things that have their home in the coral habitat
- Produce an artistic version of the coral habitat
- Reflect on the diversity of life on the coral reef

Resources



Slideshow 2:
Reef builders



Student Sheet 2a:
Coral life templates

Student Sheet 2b:
Coral life checklist

Student Sheet 2c:
Dive log



Activity:
Coral reef in a box

Activity:
Coral reef mural



Gallery:
Coral life



360 Gallery:
Preserved Oceans



Subject Update:
How to: Use Google expeditions

Subject Update:
How to: Use Encounter 360

SCHEME OF WORK

Lesson 3: Amazing polyps

Overview

The Great Barrier Reef stretches for over 2,300 kilometres along the eastern coast of Australia, but the creatures that have created this habitat can measure just a few millimetres across. This lesson covers the basic anatomy of the coral polyp, their life cycle and reproductive processes, and finishes with a game that shows how tropical coral polyps get their energy boost to create such amazing structures.

Learning outcomes

- Understand that one of the few living structures visible from space is made up of tiny animals
- Describe the anatomy of a coral polyp
- Explain and compare the life cycle of coral
- Understand the different methods that coral polyps use to get their energy
- Review learning and reflect on the role of the coral polyp in creating the reef

Resources



Slideshow 3:
Amazing polyps



Student Sheet 3a:
Coral reef scales

Student Sheet 3b:
Coral life cycle

Student Sheet 3c:
Dive log



Activity:
Incredible edible polyp

Activity:
Coral feeding game



Gallery:
Coral life cycle

Gallery:
Coral reef scales

Lesson 4: Coral classification

Overview

This lesson introduces students to the range of life on the reef. Starting off by learning to name and identify different species, students will then sort these into different groups and start to use classification keys. More advanced classes may want to devise their own keys.

Learning outcomes

- Understand that living things can be grouped based on observable characteristics
- Use scientific language to describe groups of living things
- Identify and name a variety of living things using classification keys to assign them to groups
- Review classification and identification and demonstrate new learning in the context of underwater exploration

Resources



Slideshow 4:
Coral classification



Student Sheet 4a:
Grouping coral life

Student Sheet 4b:
Classifying coral life

Student Sheet 4c:
Coral keys

Student Sheet 4d:
Dive log



Gallery:
Coral life



360 Gallery:
Living reef



Subject Update:
How to: Use Encounter 360

SCHEME OF WORK

Lesson 5: Coral explorer

Overview

This lesson combines science and creativity to help young people learn more about life on the coral reef and the food chains that link them together. The output for this activity is to create a mobile to hang at home or in the classroom, showing some of the main types of life that can be found on the coral reef, and how they are related through predator-prey relationships.

Learning outcomes

- Understand how different living things get their energy through feeding
- Identify the range of primary producers in the ocean
- Describe food chain relationships using scientific terms
- Demonstrate the concept of food chains using a craft activity
- Reflect on the importance of all parts of food chains

Resources



Slideshow 5:
Coral food chains



Student Sheet 5a:
Food chains

Student Sheet 5b:
Dive log



Activity:
Coral food chain mobile



Video:
Underwater classroom:
Reef shark

Video:
Underwater classroom:
Sea cucumber

Video:
Underwater classroom:
Wall of mouths



Gallery:
Coral life

Lesson 6: Adaptation on the reef

Overview

Different species have adapted to life on the coral reef in amazing and diverse ways. From sleeping in mucus bubbles, to flexible snakelike skeletons, life on the reef has had to find ingenious methods for finding food and staying alive. The reef is also host to numerous examples of symbiosis, and creatures finding food and safety in the strangest of places – whether in a shark's mouth or by 'vacuuming' the sandy seabed. In this lesson, students are challenged to create the ultimate reef animal.

Learning outcomes

- Identify specific adaptations used by living things on the reef
- Explain the need for adaptation for survival
- List a range of adaptations on the reef
- Apply knowledge of adaptation to create the ultimate coral animal
- Review understanding of adaptation

Resources



Slideshow 6:
Adaptation on the reef



Student Sheet 6a:
Dive log



Gallery:
Coral life

Gallery:
Adaptation on the reef

SCHEME OF WORK

Lesson 7: Human impact on the reef

Overview

Students will consider the various impacts humans have had on the coral reef ecosystem, both positive and negative. These impacts range from long-term environmental changes caused by increased atmospheric carbon dioxide, to changes in land use in coastal areas and the impact of fertilisers on the ecosystem balance. Students will be prompted to consider what changes could be made to ensure that there are healthy coral reefs well into the future.

Learning outcomes

- Describe the importance of natural environments, including what they give to humans
- Explore examples of human impact (both positive and negative) on environments
- Recognise that environments can change and that this can sometimes pose dangers to living things
- Suggest actions that can be taken on a global and local scale to reduce the negative human impact on environments

Resources



Slideshow 7:
Human impact on the reef



Student Sheet 7a:
Coral futures dominos

Student Sheet 7b:
Coral futures poster



Video:
Sailing home



Gallery:
Coral threats



360 Gallery:
Coral bleaching



Subject Update:
Learn more: Coral threats overview

Lesson 8: Coral press conference

Overview

This final lesson brings together all the previous learning as the classroom expedition returns to port, and the team delivers a press conference. The output from this lesson can be a written article, a blog post, audio report, press release, or video. These outputs can be shared at an assembly, parents' evening, with the local press, or you can send a selection through to Encounter Edu (info@encounteredu.com) so that we can post them on our website.

Learning outcomes

- Describe the importance of natural environments, including what they give to humans
- Explore examples of human impact (both positive and negative) on environments
- Recognise that environments can change and that this can sometimes pose dangers to living things
- Suggest actions that can be taken on a global and local scale to reduce the negative human impact on environments

Resources



Slideshow 8:
Coral press conference



Student Sheet 8a:
Sailing home blog

Student Sheet 8b:
Storyboard template

Student Sheet 8c:
Article template