

NATIONAL
SEA**LIFE**
BRAY

Primary
Junior Cycle

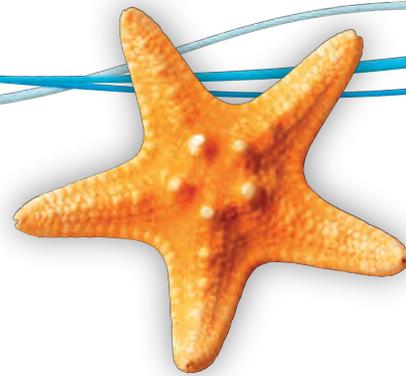


Teacher's Resource Pack

SESE Curriculum

Welcome To SEA LIFE's

Teaching Toolkit



The teaching toolkit has been developed with practicing teachers to provide a complete set of tools for a series of stimulating lessons. This toolkit aims to use the exciting variety of animals that live in seas, oceans, and rivers to inspire your students and help them understand a wide range of SESE curriculum topics. Accompanied by a trip to SEA LIFE Aquarium, where students can see, touch and experience true WOW moments, these resources will help you to create Amazing Discoveries for your class.

The toolkit focuses on science, and covers five key topic areas. These are:

- ~ Movement and the Senses
- ~ Reproduction
- ~ Living Creatures
- ~ Classification and Variation
- ~ Caring for animals and their environments

Conservation and education always have been, and always will be, at the heart of SEA LIFE's work. This resource highlights the importance of marine welfare, drawing out conservation messages in all the relevant topic areas. A trip to SEA LIFE Aquarium will help to provide a greater understanding of the conservation issues we face, what SEA LIFE is doing about them, and how every one of us can help.

The resource also supports cross curricular learning, using the sea's creatures as a focus for activities that support Art, Drama, English and Maths, amongst others. These cross curricular opportunities are highlighted for each topic.

Each topic is supported by the following elements:

Teacher Notes

The notes in this booklet lay out the background information, learning objectives, and cross curricular links for each topic. They also contain activities which can be carried out before, during or after a visit to SEA LIFE. Each section also features exciting **WOW** facts to inspire students and teachers alike!

Student Worksheets

The Student Worksheets contain all of the resources which your students need for each topic's activities. Remember to produce enough copies of the Student Worksheets for every member of the class.

Power Point Slides

The Power Point slides contain a collection of engaging information and striking pictures to help your students develop their understanding of each area.

Movement & Senses

These resources look closely at two of the core life processes: movement and sensitivity. The incredible range of species at SEA LIFE Aquarium will help your students see that animals can move in many different ways. You can take it further in the classroom with role-plays and discussion about the way each animal's body affects the way it moves. Students will also look at the role of the senses and the sensory organs. The resource will help you to grab students' attention by pointing out some of the amazing, highly specialized senses common to some sea creatures!

Resources provided

- Student Worksheet 1
- Movement Power Point slides

Before & After activities

Activity 1: How do you move?

- Quickly recap the core life processes using the slides.
- Ask students to think about the different ways they can move and make a list of as many different ways that they can think of (for example, running, jumping, crawling).
- Ask students to demonstrate some of these types of movement.

Resources:

- Slides 1-3

Activity 2: Make out the movement

- Explain that different animals which live under the sea can move in many different ways.
- Students should look at the pictures and descriptions on Student Worksheet 1 and work out which description applies to each animal.
- Students can cut out the description and stick it in the box next to the relevant animal.

Resources:

- Student Worksheet 1
- Slides 4-5

Activity 3: Acting like an animal

- Show the class the animals on slides 6-10.
- Ask students to suggest how that animal moves. As a class act out that movement.

Resources:

- Slides 6-10

Activity 4: Animal Art

- Ask students to draw a picture of a sea creature.
- Underneath their picture they could describe how it moves.

Resources:

- None required

Activity 5: Senses quiz

- Introduce students to the different senses using the slides.
- Use the Power Point slides to run the senses quiz.
- Students should look at the sense organs shown on the slides and decide which of the three animals listed it belongs to. Click on the name of that animal to find out if they are right. If the class is wrong, ask them to try again.
- Once they have worked out which animal the sensory organ belongs to, ask them to name which sense it is associated with.

Resources:

- Slides 11-34

Activity 6: Invent a sense

- Ask students to think of a brand new sense which could help them in their day to day life.
- Ask them to write a short paragraph explaining the sense and how they use it – or ask them to draw a picture of themselves using that sense.

Resources:

- None required

Activity 7: Senseless

- Collect a number of items with strange textures. They could include sand paper, sponges, cereal, or silly putty.
- Place each of the items in a separate box with a hole in the lid.
- Blindfold students and ask them to take turns putting their hands in the box. Once they have felt the object inside tell them to write down what they think it is.
- Once students have tried all the boxes, ask for their answers.
- Explain that living underwater can mean that some animals cannot use some senses (deep sea fish cannot see due to a lack of light for example).
- Explain that some animals make up for this by developing other strong senses.

Resources:

- Boxes with a hole cut in the top of each one
- Objects with strange textures
- Blindfolds

Learning Objectives

- Know that all animals move and have senses.
- Understand that different animals move in different ways.
- Know that other animals' senses can be different to a human's.

Curriculum Subjects

- Living Things
- Energy & Forces
- Environmental Awareness & Care

WOW facts!

- Sea horses can move each of their eyes independently - so they can look forwards and backwards at the same time!
- Jellyfish don't have a brain!
- Seals can hold their breath for up to 30 minutes!
- Rays breathe through special holes behind their eyes!
- A herring never stops swimming during its lifetime. Every year it swims as far as to the moon and back!
- By using their Lateral Line, fish can find other fish through sensing tiny vibrations.

During your visit

- Ask students to look for three creatures which move in very different ways. They could draw a picture of that creature and write a few words explaining how they move.
- Students could draw a picture of an animal they saw at SEA LIFE Aquarium and label the sensory organs.

Reproduction

These resources start by introducing your students to the basic life cycle of all living things. They will consider the changes that take place during an animal's life, and recognize the big differences between some species and their young. Finally, students will be introduced to the different ways animals reproduce. The incredible range of species at SEA LIFE provides a great context to compare different animals and their young, helping your students to understand the idea of a life cycle. The slides will introduce them to the work that SEA LIFE does to protect seal pups and other vulnerable animals, helping to highlight the importance of conserving animals during the vulnerable reproduction period.

Resources provided

- Student Worksheets 2-3
- Reproduction Power Point slides

Before & After activities

Activity 1: The Life Cycle

- Students are to place the different stages of a penguin's life cycle in the correct order.
- They should read the statement and decide which statement corresponds to each animal. They can cut out each description and stick it next to the correct animal.
- Display the answers on slide 6.

Resources:

- Slides 1-6
- Student Worksheet 2

Activity 2: Life cycle collage

- Students could cut out pictures of humans and other animals at different stages in their life cycles.
- These can be turned into a collage to show how animals change as they progress through life.

Resources:

- Magazines and the Internet
- Scissors
- Glue
- Paper

Activity 3: True or false quiz

- Use the slides to explain to students that different animals reproduce in different ways.
- Now use the questions on the slides to conduct a true or false quiz. There are some challenging questions and students may be surprised by some of the answers which can be discussed as a class!

Resources:

- Slides 7-19

Activity 4: Animal snap

- Put students in pairs.
- Cut out the two sets of cards on Student Worksheet 3. One contains pictures of underwater animals; one contains pictures of their babies.
- Give one set to each of the pair.
- One student should lay down a card showing an animal.
- The other should then try to lay down the card with an image of a baby or adult which matches the animal.

Resources:

- Student Worksheet 3

During your visit

- Students could try to spot a baby animal, and note how it is different to the adults of that species.
- Ask students if they can spot any signs of new life such as eggs or pregnant animals. They could draw a picture of any they see.
- Will your students dare to hold a crab or touch a star fish? They will get the chance at the Rock Pool Touch Tanks.

Learning Objectives

- ~ Know that all animals have a life cycle, which involves growing from a baby to an adult.
- ~ Know that there are a lot of different ways in which animals reproduce.

Curriculum Subjects

- ~ Living Things
- ~ Energy & Forces
- ~ Environmental Awareness & Care

WOW facts!

- ~ Male sea horses "give birth" to their young! The female lays her eggs in his pouch and they stay there until they hatch.
- ~ It's not genetics that determines whether a hatching turtle is male or female - it's the nest temperature. The higher it is, the more females are born!
- ~ A newborn Blue Whale calf will weigh about 6,000 lbs. - that's more than a car!
- ~ The clown fish can change from female to male, once the male in its colony dies.
- ~ The Emperor Penguin can make six journeys of 100 miles to collect food while their partner looks after its egg.
- ~ The Ocean Sunfish can produce up to 300 million eggs at any one time.



Living Creatures

Understanding the different life processes and being able to work out whether an object is living or not is vital to life sciences. These resources will help your students to grasp the name and meaning of the life processes. They are also encouraged to look more closely at nutrition, seeing how each animal is suited to catching the food it eats. A visit to SEA LIFE Aquarium can be a great introduction to the topic, or give your students a chance to reinforce their learning about this topic.

Resources provided

- Student Worksheets 4-5
- Living Creatures Power Point slides

Before & After activities

Activity 1: Living Creatures

- Use the slides to introduce students to the fact that all humans and animals grow, feed, reproduce, eat, and use their senses.
- Students to look at Student Worksheet 4, which contains these life processes as key words and mixed up descriptions.
- Students should match the key words to the descriptions.
- Use Slide 8 to reveal the answers.

Resources:

- Slides 1-8
- Student Worksheet 4

Activity 2: Am I living?

- Students to complete the table on Student Worksheet 5 for each of the living and non-living objects listed.
- They should work out if the object is living or not by putting a check or a cross against some of the different life processes i.e. grow, feed, reproduce, sense and move.
- Students may need help deciding on the answer for some objects.

Resources:

- Student Worksheet 5

Activity 3: Color me in

- Students can color in the picture of a turtle on Student Worksheet 4.

Resources:

- Student Worksheet 4

Activity 4: What's for dinner?

- Using the slides, explain that all animals eat different foods and that often their bodies are specially adapted to help them catch their food.
- Conduct the quiz on slides 10-29 as a class.
- Display the picture and description of the animal and ask students to choose which of the animals shown below it eats.
- Click on the answer to find out whether it is correct.
- If Power Point facilities are not available, you could print out copies of the slides before the lesson.

Resources:

- Slides 9-29

Activity 5: Living collage

- Students can make a collage to celebrate all of the different types of living things that exist in the world's oceans.
- They should make sure to include plants, mammals, and reptiles as well as fish.

Resources:

- Sources for downloading images

During your visit

- Students could list the living and non-living things in the rock pool during their visit.
- Students could find out what the different creatures in the rock pool eat.

Learning Objectives

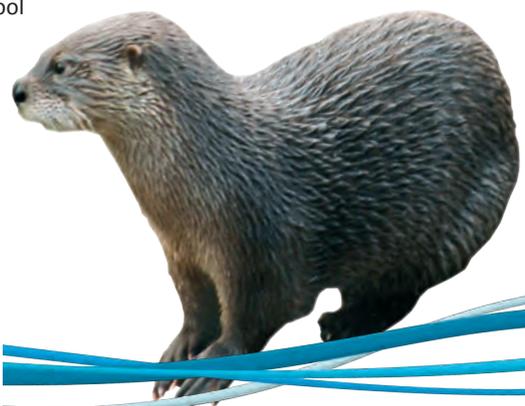
- ~ Know what the key life processes are.
- ~ Know that a living thing must demonstrate all of the life processes.
- ~ Know how to tell the difference between animals and plants.

Curriculum Subjects

- ~ Living Things
- ~ Energy & Forces
- ~ Environmental awareness & Care

WOW facts!

- ~ Sharks have been around longer than dinosaurs, over 350 million years!
- ~ Turtles are ancient reptiles - they've been around for 200 million years and can live to be 100 years old!
- ~ If a star fish loses an arm it grows another one!
- ~ The Giant Otter grows to six feet long!
- ~ Catfish are covered in taste buds, which helps them to find food in muddy water.



Classification & Variation

These resources introduce your students to the idea of classifying animals. They show that common features between animals can often mean that they are part of the same family. Your students will be encouraged to look closely at animals in order to recognize small details about their appearance, a key skill for young scientists to master. Grouped with a visit to SEA LIFE Aquarium, they will help to excite your students about animals and help them to understand the distinctions between the different families.

Resources provided

- Student Worksheets 6-8
- Classifying animals Power Point slides

Before & after activities

Activity 1: Grouping animals

- Use the slides to explain that animals can be categorized into groups.
- Cut out the cards on Student Worksheet 6 and give a set to each student.
- Explain that animals can be broadly grouped together based on their characteristics, and that often those animals which look similar come from the same family.
- Ask the students to look at the pictures on the cards and try to separate the animals into groups.
- Alternatively, ask students to start looking closely at animals' features by asking them to find all the species which share a certain characteristic (such as fins or grey skin).
- The animals are shown grouped by class on slides 9-13.

Resources:

- Slides 1-13
- Student Worksheet 6

Activity 2: The fish family

- Explain that within each animal group, there is a huge variety of species that have very different features.
- Use Student Worksheet 7 to get students looking at different species of fish. They could highlight the similarities and differences between the species.

Resources:

Student Worksheet 7

Activity 3: Which group

- Ask students to look at the pictures of the animals on Student Worksheet 8.
- They should then read the descriptions of five different types of animals and decide which group each animal comes from.
- They should cut out each description and stick it in the box next to the relevant animal.
- You can display slides 4-8 again; these contain more information about each group.

Resources:

- Student Worksheet 8
- Slides 4-8

During your visit

- Students could look for two species from one family (e.g. fish or crustacean) and draw pictures of these two animals. They could note down any differences between the two species.
- Ask students if they can make a note of 3 different fish which they see during their visit to SEA LIFE.

Learning Objectives

- ~ To recognize similarities and differences between animals.
- ~ To group living things according to noticeable similarities and differences.
- ~ To spot similarities and differences between different environments and ways in which these affect the animals and plants found there.

Curriculum Subjects

- ~ Living Things
- ~ Energy & Forces
- ~ Environmental Awareness & Care

WOW facts!

- ~ Unlike other bird species, penguins have solid bones and can't fly.
- ~ The Horseshoe Crab is more closely related to spiders than crabs!
- ~ An octopus has blue blood, three hearts, and can alter the complexion of its skin in the blink of an eye!
- ~ Fish are the most diverse class of vertebrates – there are more than 31,500 species of them!
- ~ The crocodile family is believed to be over 200 million years old.
- ~ Six species of fish account for more than half of the 70 billion fish caught for food around the world every year.



Caring For Animals And Their Environments

These resources will help your students to understand that all animals have a specific environment that they prefer. They will learn how humans can damage these natural habitats and the importance of helping to protect them. The activities also show the conditions of coral reefs. A visit to SEA LIFE Aquarium will help your class to understand what conservation issues we face, what SEA LIFE is doing to protect them, and how every one of us can help.

Resources provided

- Student Worksheets 9-10
- Protecting habitats Power Point slides

Before & After activities

Activity 1: Where do I live?

- Use slides 1-7 to introduce students to the concept of habitats.
- Students look at the pictures of the environments on Student Worksheet 9 and identify which of the animals lives in each habitat.
- They should draw a line to connect the animal to its habitat.

Resources:

- Slides 1-7
- Student Worksheet 9

Activity 2: Word search

- Students should read the story about the destruction of a coral reef environment on Student Worksheet 10.
- They can then complete the word search on Student Worksheet 10, finding words associated with the damage being done to the reef.

Resources:

- Student Worksheet 10

Activity 3: A happy ending

- Ask students to read the story about the coral reef again.
- They could write a happy ending for the story.

Resources:

- Student Worksheet 10

Activity 4: Conservation poster

- Drawing on the information provided on slides 8-10 and Student Worksheet 10, students could create a poster to encourage other people to help protect the clown fish's environment.
- They could draw pictures to help make it engaging and informative for other children.

Resources:

- Student Worksheet 10
- Slides 8-10

During your visit

- Students could write notes on two of the different environments provided by SEA LIFE. They could make a note of the different types of cover which can be found, and the animals which live there.
- Students could make a note of one of the conservation tips which they see during their visit to SEA LIFE.
- Students could ask questions to the SEA LIFE staff during the rock pool talk to find out how they look after the animals in the tide pool.



Learning Objectives

- ~ To understand what a habitat is.
- ~ To understand the importance of habitats to the animals which live there.
- ~ To know that humans have a role to play in protecting these habitats.

Curriculum Subjects

- ~ Living Things
- ~ Energy & Forces
- ~ Environmental Awareness & Care

WOW facts!

- ~ The biggest threat to sea horses is their use in Chinese medicine. Over 20 million die every year.
- ~ 100 million sharks are killed by people every year!
- ~ The biggest threat to Leatherback Turtles is plastic bags in the ocean! The turtles mistake them for jellyfish and eat them.
- ~ The biggest threat to shrimp is a type of fishing called trawling.
- ~ The Giant Pacific Octopus species is protected due to their declining numbers.
- ~ Sting Rays are often caught in fishing nets. Bycatch is the word used for unwanted animals caught in fishing nets.
- ~ Seals have been hunted by man for thousands of years. They are mostly hunted for their skin.
- ~ There are 35 different seal species worldwide. The rarest is the Mediterranean Monk Seal with fewer than 500 individuals remaining.
- ~ 60% of the known species of fish live in coral reefs which are one of the most threatened ecosystems on Earth!
- ~ Three quarters of the Earth's surface is covered by water, which means fish have plenty of choice about where to live!