



West Midland Safari and Leisure Park

Teachers' Notes

SeaQuarium – Key Stage 1

Sea Shapes – Maths, Science.

Sea animals and plants exhibit a great range of standard and less familiar shapes and many of these can be seen clearly in the local SeaQuarium.

Looking for these shapes gives children a specific focus at each of the tanks, particularly if copies of the sheets are available during the visit.

Stationary or sessile animals living in water are radially symmetric as are many floating ones such as jellyfish. Overall pressure is equal in every direction on these animals, Reflective symmetry in many of the bilaterally symmetrical animals could be explored.

If the activity is set up in school, wallpaper paste can be added to the water. This gives a viscous liquid which slows the descent of the shapes, allowing more accurate timing. Discussion of the different speeds and of 'best' shapes for swimming and diving leads to an understanding of the concept of streamlining and water resistance and also to the idea of animal adaptations to different lifestyles within marine habitats.

If you lived in the sea... – Science, English.

This sheet compares adaptations of a seal to life in water and the specialised equipment used by humans to explore seas. Most equipment designed to allow humans to survive in habitats to which they are not adapted has its counterpart in the animal or plant kingdoms.....nothing new under the sun!

The seal has a streamlined shape (children may notice that there are no ear flaps) for fast movement in water (4.9m per sec.) and the diver adopts this shape also (speed swimmers smooth ear outline with caps but divers cannot swim as fast as a seal swimming at moderate speed).

The seal has flippers which increase the surface areas of the limbs to augment the push against water. Divers adopt this strategy. Some of the children may have experience of flippers or fins.

All seals have a thick layer of blubber below the skin which not only aids in streamlining but also provides insulation. Some seals have two layers of hair which allow an insulating air layer to be trapped. The wet suit of divers performs similar functions.

The lens, retina and shape of a seal's eye are adapted for water vision, sometimes in low light intensities. The diver wears a mask to trap an air layer to aid vision and often carried a torch for use in dim light. Many children will have used goggles.

Seals can dive under water for long periods (20-73 minutes) and can return quickly to the surface. They can do this by reducing heart rates, collapsing lungs, storing oxygen and other physiological mechanisms. Humans can also stay below water for extended periods but require external aids such as snorkels and gas cylinders as well as depth gauges combined with watches and must re-surface slowly. The diver also carries a knife which can be useful for cutting an escape route out of fishing nets. The seals (and dolphins, porpoises, whales and sea lions) have no way out of these traps and deaths of these marine mammals are common. Line caught fish are much more mammal friendly.

Looking for the plants and animals mentioned on the sheet will keep the children focused on the exhibits. They will be able to find many more sights, sounds, smells and touches than are mentioned. Even if they cannot touch an exhibit, they can imagine how it feels and produce describing words related to it.

Thinking about using their own senses under water allows them to empathise with the living things which they can see and touch. It is hoped that this will encourage them in their creative activities and also, importantly, will help to develop the wish to care for them by keeping their environment clean and healthy – as far as they are able.

Movers – Science, English

This sheet includes activities linked to different sections. If the children make starfish and whelk models from plasticene they might discover that they do not move easily over solid surfaces. Oil or washing up liquid provide lubrication to reduce friction and can remind children about the mucus used by snails for the same purpose.

Each part of the sheet concentrates on different animals which may be seen in the tanks. The first section asks the children to look carefully at movement. It can be partially done in the classroom (depending upon the children's knowledge) and finished at the SeaQuarium. Alternatively it can be used at school to predict how each animal moves and these predictions checked during the SeaQuarium visit. The second section, which can be used independently, requires the users to look closely at the shapes of different fish and at the picture of them. The shapes are all very distinctive. This part of the sheet could be used individually or by groups of children with an adult. Production of describing words might then be a joint effort! These describing words could be used along with illustrations to make very beautiful and effective creative writing. The SeaQuarium staff would be interested to see these.

Who Eats Who – Science, English (extension writing)

The first part of this sheet could be tackled by KS1 children in groups, each with an adult or by KS2 children individually. The SeaQuarium staff are happy to provide information and to guide groups to the appropriate exhibits where there are information signs about animal feeding habits. Among other food items Starfish eat Mussel, Lobster-Blenny, Shark-Mackerel, Sea Anemone-Small Shrimp, Basking Shark-Plankton, Winkle-Seaweed, Whelk-Winkle, Mussel-Plankton, Barnacle-Plankton, Wrasse-Barnacle, Seal-Wrasse.

These give the following food chains:

Seaweed → Winkle → Whelk

Plankton → Mussel → Starfish

Plankton → Barnacle → Wrasse → Seal

Plankton → Basking Shark (This fish – the second biggest in the world – filters plankton from water the volume of a swimming pool every hour!)

The environmental message concerns the vital importance of Plank Plankton (Phytoplankton). This is responsible for nearly half of the photosynthesis in the world, producing half the oxygen in the atmosphere. Since it circulates freely around most marine animals, it forms the basis for countless foodchains. The largest migrations of life on earth occur each night when millions of tonnes of fish, bottom living and planktonic animals move vertically to feed on the surface Phytoplankton – for some a three hour journey, repeated each morning in reverse! The BBC Blue Planet series gives some visual idea of this phenomenon. The children may be prompted to think about how much of their litter and rubbish ends up in the sea. This 'stuff' has massive implications for the health and future survival of all sea life.

Rhyl SeaQuarium lists a large number of items (some really bizarre) found in Shark's stomachs. Speculations about how these things got there could form the basis for some imaginative writing!

SeaQuarium staff are always interested in seeing such extension work!