



Key Stage 1 (Year 1 and 2)

The National Curriculum programme of study, sets out a series of requirements that children must be taught within a specific year group. For each key stage, there is also a requirement to follow practical scientific methods, processes and skills. Alongside these, there are non-statutory notes and guidance for teachers to follow.

Each idea will have a National Curriculum statutory requirement.

Key Stage 1 – Science - Statutory requirements:

During years 1 and 2, pupils should be taught to use the following practical scientific methods, processes and skills through the teaching of the programme of study content:

- asking simple questions and recognising that they can be answered in different ways
- observing closely, using simple equipment
- performing simple tests
- identifying and classifying
- using their observations and ideas to suggest answers to questions
- gathering and recording data to help in answering questions

Pupils should be taught to:

- Identify and name a variety of common wild and garden plants, including deciduous and evergreen trees
- Identify and describe the basic structure of a variety of common flowering plants, including trees.

- Identify and name a variety of common animals including fish, amphibians, reptiles, birds and mammals
- Identify and name a variety of common animals that are carnivores, herbivores and omnivores
- Describe and compare the structure of a variety of common animals (fish, amphibians, reptiles, birds and mammals, including pets)
- Identify, name, draw and label the basic parts of the human body and say which part of the body is associated with each sense.
- Explore and compare the differences between things that are living, dead, and things that have never been alive
- Identify that most living things live in habitats to which they are suited and describe how different habitats provide for the basic needs of different kinds of animals and plants, and how they depend on each other
- Identify and name a variety of plants and animals in their habitats, including micro-habitats
- Describe how animals obtain their food from plants and other animals, using the idea of a simple food chain, and identify and name different sources of food.
- Observe and describe how seeds and bulbs grow into mature plants
- Find out and describe how plants need water, light and a suitable temperature to grow and stay healthy.
- Notice that animals, including humans, have offspring which grow into adults
- Find out about and describe the basic needs of animals, including humans, for survival (water, food and air)
- Describe the importance for humans of exercise, eating the right amounts of different types of food, and hygiene.

Geography (KS1 and KS2)

Aims:

The national curriculum for geography aims to ensure that all pupils:

- Develop contextual knowledge of the location of globally significant places – both terrestrial and marine – including their defining physical and human characteristics and how these provide a geographical context for understanding the actions of processes
- Understand the processes that give rise to key physical and human geographical features of the world, how these are interdependent and how they bring about spatial variation and change over time
- Are competent in the geographical skills needed to: collect, analyse and communicate with a range of data gathered through experiences of fieldwork that deepen their understanding of geographical processes

KS1 History:

Pupils should be taught about:

- The lives of significant individuals in the past who have contributed to national and international achievements.

KEY:

Brown – work for booklets/tasks

Red – learning intentions and outcomes

Blue – Key Stage 1 - National Curriculum Requirements

Idea 1: Prehistoric Cousins

Fossil Hunt -Do rocks tell stories?

- Explore and compare the differences between things that are living, dead, and things that have never been alive

Here, we want the children to start talking about how rocks can tell stories from the past (especially marine animals). We want them to start to ask simple questions whilst observing, gathering data, recording and categorising what they've found. Just like a real scientist!

(This could be done in the sand area or have a separate large tray/trough)

Equipment: Trowels, small hammers, paint brushes, microscopes and hard hats.

In the sandpit, you/we could hide small fossils for the children to find. There could be a picture above the tray so they can match and sort the fossils. This could be recorded on to a worksheet with a drawing, where they found it and at what time, with any other observations.

The fossils could be from an ammonite, a land dinosaur or a marine based dinosaur. You/we could have a guessing game; what are these?

Dinosaur poo, Ammonite, ichthyosaur spines or jaws...

- We/You could project an image of fossilization happening on the ceiling.



This large scale fossil/skeleton within a sandpit would be interesting and an idea to think about in the future?

Idea 2: Exciting Predators

Working from an image:

- Killer whales can smell a single drop of blood floating in 10 million drops of water. They can detect movement from as far away as 820 feet.

Could we somehow convey this within an image?

-That's like a single drop of water in a swimming pool and you being able to detect someone moving over 20 bus lengths away!

If we do work from an image, could we ask:

How many buses away can a killer whale detect movement from?

How many millions drops of water can a killer whale smell a single drop of blood?

What senses are they using?

What makes this exciting predator so deadly?

A good worksheet idea to help the children think about and discuss what they are learning:

If you enhanced one of your senses, which one would it be and what special thing would you be able to do? Draw yourself.

A deadly 60 video on deep sea predators:

<https://www.youtube.com/watch?v=q2CSBTuFmu8>

Idea 3: Food chain/Animal categories

Spinning puzzle

- Identify and name a variety of common animals that are carnivores, herbivores and omnivores
- Identify and name a variety of common animals including fish, amphibians, reptiles, birds and mammals
- Describe how animals obtain their food from plants and other animals, using the idea of a simple food chain, and identify and name different sources of food.

We/you could create our own spinning puzzle (which has 3 different sides) to show the different animals who are omnivores, carnivores and herbivores. (With a link to the food chain and animals that are within the aquarium)

The children would complete the jigsaw, then choose one animal from each picture to copy onto a task sheet. **This would help them to begin to think about differences between the sea creatures in the aquarium.**

Draw and name a;

Herbivore

Omnivore

Carnivore

Draw a picture of something that these creatures would eat or fill in the missing blanks... (from the pictures) Now find the creature in the aquarium.



Idea 4: Food chains

An eco-system within a rock pool

- Identify that most living things live in habitats to which they are suited and describe how different habitats provide for the basic needs of different kinds of animals and plants, and how they depend on each other
- Identify and name a variety of plants and animals in their habitats, including micro-habitats
- Describe how animals obtain their food from plants and other animals, using the idea of a simple food chain, and identify and name different sources of food.

Rock pools are micro habitats that support themselves and if we had one that the children could stand or sit round, draw and somehow interact with the creatures it would be great.

Suggested Practical for Children at School or at Clacton Pier.

Could they somehow fish for questions and answers with a net or a bucket and then list and draw the things that they can see within the rock pool: Crabs, Starfish, Mussels/shellfish



Idea 5: Habitats and Adaption

Projected tasks:

- Identify and name a variety of plants and animals in their habitats, including microhabitats
- find out about and describe the basic needs of animals, including humans, for survival (water, food and air)

In the middle of the floor, where the children usually sit, we/you could project a rock pool to give information about habitats. This can be used for extra info too, such as: a welcome to a school party, world shark week, environmental projects going on around Clacton or at the pier and lots more.

We/you could also talk about microhabitats here:

e.g: This is a small rockpool, we can also call this a microhabitat. Who lives here? What can you see? What is happening? (We/you could show the small fish eating the plankton, the larger fish eating them, the fish laying eggs for the lifecycle, different kinds of species etc)

Projection of questions onto floor:

- What kind of habitat do you live in? (We/you could have a choice of habitats for the children to choose)
- What kind of things are essential in your habitat? (more pictures such as: food, shelter, people etc)
- Where do you think the biggest habitat in the world is? (show map and let the children decide)

BIG QUESTION: See if you can spot anything in the aquarium that the creatures here might need, in order to survive in their habitats. (They could record this somewhere in the pack) to talk about later.

Idea 6: Habitats and Adaption

Design your own species.

- Identify that most living things live in habitats to which they are suited and describe how different habitats provide for the basic needs of different kinds of animals and plants, and how they depend on each other
- Using their observations and ideas to suggest answers to questions

The Axolotl:

- ✓ The axolotl is very adaptable and can live on land and in water. He can even grow his limbs back if he needs too
- ✓ On top of this, they can rebuild their jaws, spines, and even brains without any scarring
- ✓ They can regenerate the same limb over 100 times
- ✓ Its long spiky gills are on its head and are quite different from any other gills we see on fish.
- ✓ If its habitat disappears, this species can also live on land

Here we/you want the younger children to think about the special features animals need to be able to survive. The axolotl is a great species to look at as it is very adaptable. The children can design their own creature, making them think about survival in both kinds of habitats.

The axolotl is very adaptable. It can live on **land** or in the **water**.

The adaption game -Chalkboards? Magnetic plastic body parts? Build your own creature.

Let's decide what you will need:

Where will it live? In land or water?

How will it breathe?

What will it eat?

What kind of special features will it have?

Large ears, big eyes, no eyes, gills, big nose, small nose, hair all over, scales, long arms, a tail, legs (a variety)...etc

Look into myths and legends on this species...

Can you draw your new species?

Idea 7: Habitats and Adaption

Timer

- Explore and compare the differences between things that are living, dead, and things that have never been alive

Question: What is an organism?

Answer: Organisms are living things. Trees, plants, animals, humans and even a germ is an organism.

This is a simple task for children to learn what an organism is and then testing their knowledge in a fun way. (you would need an adult for this)

Flip the egg timer and name as many living things as you can before the time runs out. Have someone else count.

Have a score sheet:

5 or under – A really good try. Well done. Now look around for living things in the aquarium – we have over 100 different species. Can you learn any new ones?

5-10 – not bad at all. Well done

10-20 – wow! You're good

20 and over. Amazing!

Now do the same for non-living.... Did you get more?

Grab a partner or an adult and see if they can remember everything you said!

Then swap, give the adult a turn.

Idea 8: Prehistoric Cousins

Learning about Mary Anning

KS1 History:

Pupils should be taught about:

- The lives of significant individuals in the past who have contributed to national and international achievements.

A video about Mary Anning

https://www.youtube.com/watch?v=fj_FwcnDBIM

Mary Anning's findings were extremely significant towards developing the idea that fossils contained evidence of the past.

Children should learn about and try to be Mary Anning:

Recording scientifically things such as:

Where they have found the fossil, the date, the size and its species name. (measuring could link in with maths here) – this will be on the treasure hunt around the aquarium.

Idea 9: Animal categories

- Identify and name a variety of common animals including fish, amphibians, reptiles, birds and mammals
- Identify and name a variety of common animals that are carnivores, herbivores and omnivores

Arcade/ticket machines- these machines will give out tickets for rewards.

These machines may appeal to children in a different way, giving them an incentive to play, win tickets and receive prizes.



Practical to take place at Clacton Pier

1. An old slot machine that we fit with our own pictures. It would be an animal slot machine – 3 reptiles in a row- you win, 3 fish in a row -you win, 3 sea birds in a row- you win..
2. On a wheel that spins, have a series of simple facts about prehistoric creatures from the sea. The children would have to spin the wheel, read the facts and win the tickets.
3. A true or false game with questions about fossils. The more questions you get right, the more tickets you get.
4. 'Whack a Mole' – could we change the traditional mole for something else such as: plastic and sharks, whack a reptile, whack a croc, whack a carnivore...



Idea 10: Microscopic Life

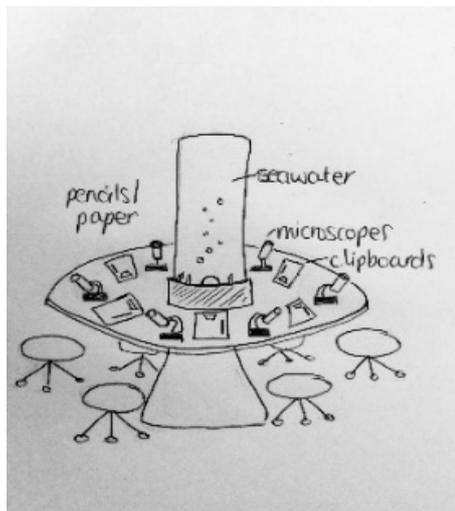
An invisible world right in front of our eyes

- Identify that most living things live in habitats to which they are suited and describe how different habitats provide for the basic needs of different kinds of animals and plants, and how they depend on each other
- Identify and name a variety of plants and animals in their habitats, including micro-habitats

Questions: What is microscopic life? What is plankton? What does plankton do?

Answer – Microscopic life, are organisms that you cannot see without a microscope. There are billions of these in the ocean. Lots of these are called plankton. A teaspoon of seawater can sometimes contain over 1 million different kinds of species. We cannot see most plankton without a microscope and plankton is really important because it supports all life in the ocean.

Here, we/you would show the children that the water they see on the beach or in a river contains microscopic life. They need to look closely, observe and record their findings. They could identify the plankton from a photo sheet that we provide. They could also record their findings on a simple pictogram (Maths link for KS1. KS2 could record and notice differences between plankton and fish, crabs, mammals)



For the table idea: In the middle, there would be a clear tube containing seawater; It could be lit? There could even be a filter in there, causing bubbles and movement within the water. On the table there would be a microscope which you could look through to see close up pictures of plankton. You could move the bottom of the microscope to change the slides. You could have 5/6

different pictures:



On the side of this we could provide clipboards and sheets to draw the plankton they've observed. Here also, we/you could have some simple maths charts to fill in. There could be images on a worksheet where you would have to find and match the plankton to the image, count the plankton or discuss the differences between some of the species.

We want them to understand that plankton cannot be seen by the naked eye but by using a microscope, a whole new world appears.

These slides could be changed in time to provide a varied experience if they are frequent visitors.

We could also provide: magnifying jars, tubes, glasses for them to take around the aquarium or static, wall mounted microscopes could also be considered.



- ❖ Also discussed was a large wall or tube with holes to view plankton. The wall could include steps and tunnels to help smaller children look into the higher 'peep' holes. The wall could be large with an image of a world

on or something else to compare the size of plankton to everything else...

- ❖ Also discussed were the whales and fish images, made out of plankton when you look closely. (Images would support the fact that everything relies on plankton).

Idea 11: Microscopic Life

- using their observations and ideas to suggest answers to questions

Design their own plankton:

Once they have learnt about what plankton is and seen the images of what plankton look like in comparison with each other, they could have some fun in designing their own. This would support the learning within the aquarium and at school, especially from the previous large idea.

Questions arising... What do plankton look like? Do they have eyes, ears and mouths? Do they grow big? What colour are they? How big are they? Why can't we see them?

Could this be done with stickers?



Idea 12: Microscopic Life and Food chains

- Describe how animals obtain their food from plants and other animals, using the idea of a simple food chain, and identify and name different sources of food.

Cogs:

Question: What is at the bottom of the food chain in an under-water habitat?

Answer: Phytoplankton is a plant-based organism with zooplankton feeding from it. All life in the ocean depends on phytoplankton.

Here, we/you would like the children to see how important plankton is in supplying the food chain for the whole ocean. By turning the bottom cog (the phytoplankton) the other cogs are able to turn.

With this activity, the aim is, for the children to see how important the small cog at the bottom might be. The objective would be to replicate a picture of a food chain with these cogs. (The cogs would have pictures of plankton, small fish etc. on them). We could even do a different series of food chains such as humans, frogs, spiders and other creatures within the aquarium.



The first one being at the bottom would be phytoplankton, the 2nd, zooplankton, the 3rd, a small fish (we could also have a whale coming from this one as it only eats plankton. The 4th, a bigger fish and then we could have a shark with its mouth open at the top of the food chain.

For Key Stage 2 – we would need to talk about predators, prey, producers and consumers. We could have these key words written on the back of the cogs somehow and a brief explanation of what they mean.

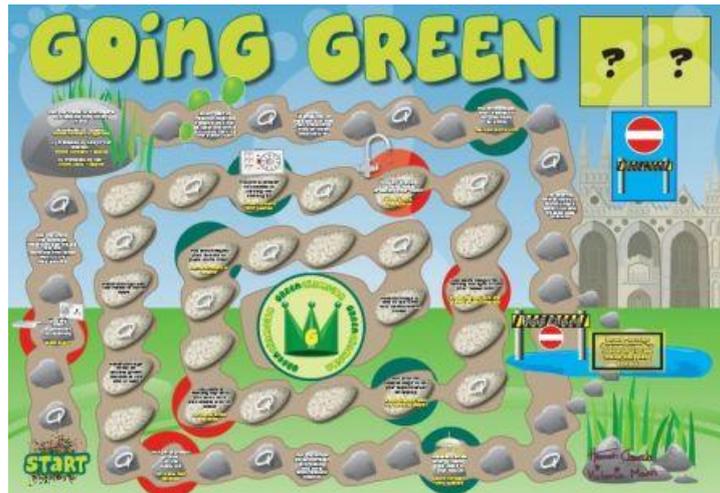
Idea 13: Environmental Issues

Geography:

- Are competent in the geographical skills needed to: collect, analyse and communicate with a range of data gathered through experiences of fieldwork that deepen their understanding of geographical processes

What are the facts on plastic pollution?

Create a board game that gives the children information on plastic pollution. There could be a large one for the children to use or a paper copy that they could sit and play. Important facts can then be put on to this for the children to learn. It could be facts and figures and it could even be within their educational pack? We would need to make it playable without a dice or counters.



Idea 14: What is the impact of plastic pollution within our oceans?

We could have a rope which could be pulled up from the floor with flags on. On these flags, **we/you could put information that might answer some questions on a worksheet**. On this rope there might be plastic bags tied to it and bottles stuck on it too. (A good way to retrieve information simply) **A worksheet could support this and ask questions on the facts.**

Idea 15: How much waste is in our oceans?

Fill a tank up of 1 person's plastic waste for a year or a week. Show how much of that waste will end up in the sea or say how many containers like this get dumped into the sea each year. We could bring some maths into this too.

Idea 16: It would be beneficial to look at the microbeads that plastic creates. (Nurdles)

- There are simple machines that separate the plastic from the sand.

If we collected sand before a school visit, they could separate the nurdles by collecting the sand with a dustpan and brush and then putting it in a large bucket of water. Plastic floats so it can be easily collected from the surface.

- We could supply the equipment for a school group to do a clean up?

- We could have a tank that we fill with nurdles and then we turn it into something useful.