

Primary School Discovery Pack



NAME

Scotland's Time Lords

Welcome to the very start of your journey! This gallery is all about how geologists (rock scientists) have transformed our understanding of planet Earth.

Look and listen to the talking portraits, the man at the chalk boards and the panels around the gallery. These are 'Scotland's Time Lords' – some of the most influential thinkers in geological history!

- Can you match up the people to their correct speech bubbles?



Charles Lyell

James Hutton

Ben Peach & John Horne

Arthur Holmes

Marie Tharp

We worked out how mountains are formed.

I am very good at sharing information with other people.

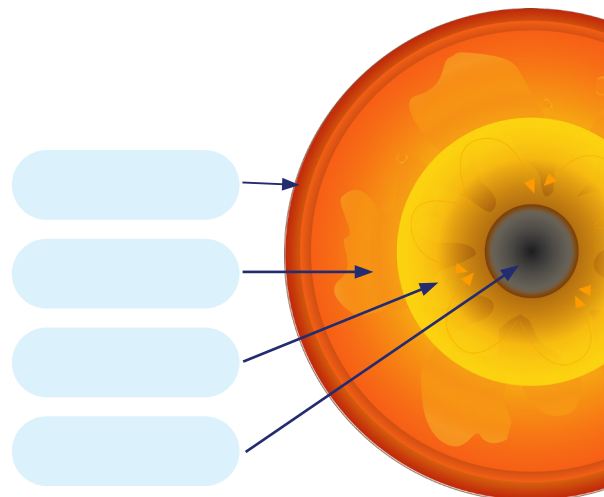
I discovered 'Deep Time'. The idea the Earth is really old!

I mapped the sea floor, discovering deep ocean mountains and trenches.

I found out a way to uncover the age of rocks.

Look at the model of planet Earth.

- What is happening to Earth's continents over time?
- Where will Scotland be in 200 million years time?
- Can you label the diagram of the Earth's layers?



Alfred Wenger proposed that Earth's land masses are in constant motion.

Around 250 million years ago, Earth's tectonic plates came together to form this super continent.



- Can you make Alfred Wegener's puzzle?

- Can you name it?

The Time Machine

You are about to be transported back to the very beginning of time, 13.7 billion years ago, aboard our very own Time Machine!

You're about to experience what geologists now call 'deep-time'. So step on board and let the Time Machine deliver you safely to the very beginning of everything!



How It All Started

Welcome aboard the spaceship! From the observation deck, let Captain ODE guide you through the wonders of our universe.

You'll witness the Big Bang and see how galaxies, our solar system and our own planet formed, before landing safely on Earth.

Restless Earth

Captain ODE has landed the spaceship in an active volcano – things are about to get heated! You're about to see, hear and feel how dynamic our planet is.

In the 'Scotland's Time Lords' gallery, you learned how continents move around - now you're going to discover what natural effects can be caused by this restless Earth!



Shaping the Surface

Time to cool off! You're now going to fly over dramatic landscapes carved out by glaciers. You'll soar over Scotland and Norway and discover the huge effect ice has had in shaping our landscape.

Casualties and Survivors

In this next gallery, it's time to explore how life on our planet has changed over time through the process of evolution. But remember, evolution often goes hand in hand with extinction, so watch out!

Before you go over the bridge, can you find out:

- When did planet Earth form? **million years ago**
- When did life begin on planet Earth? **million years ago**

Hunt for Life Wordsearch

J T R S I Y N U F U X I Q W A
 O D K W N N Y T U V C L U I R
 X S N Y J V F T O H K C E W C
 B W G L Q P O D T O J Q T A H
 W S T W B T C H S W R R Z X A
 U W Q C S W Y Z Q Q I S A I E
 J K U Z J O D U M Y N D L A O
 G F E U S A Z A Q U G P C I P
 L Y S T R O S A U R U S O E T
 Y Y E S C O R P I O N R A K E
 K G K N X J U A D F A P T Q R
 A V V K S E G O I N P F L K Y
 R I V T W S D G D U K Z U U X
 D N I Z K J I Y C Z W L S L G
 Q X S Q E B H D N C J D X U C

- LYSTROSAURUS
- ICHTHYOSTEGA
- SCORPION
- QUETZALCOATLUS
- ARCHAEOPTERYX

- What are the three major causes of extinction on our planet?

C _ i m _ t _

C _ a _ g e

P _ a t _

T e _ t o n i _ s

M e _ e o r _ t _ s



Early humans would have come face to face with a sabre-tooth cat!

- Do you think you would have survived an encounter?
- Do you think the sabre-tooth has any weaknesses?

Check out the interactive boards to find out more!

Some scientists argue we're currently in the middle of a 6th mass extinction on our planet, which is happening because of the actions of human beings. But, there is hope! We can all take action to look after our planet for each other and future generations.

The Human Animal

- Humans have four essential needs for survival, can you list them below?

F _ _ _ d

W a _ _ e _

S h _ _ l t _ _ r

E _ _ e _ _ g y



Touch the heads and have a think about what it means to be human.

Discover the Deep

Take a deep breath as you enter the next gallery, *Discover the Deep*. Follow the journey of HMS *Challenger* and Scotland's own Charles Wyville Thompson, whose work revealed the deep ocean to be a vast and vital system supporting life on Earth. Plunge into Scotland's deep waters and discover how modern marine scientists are exploring and researching the deep!

HMS *Challenger* sailed all over the world.

- Using the map on the wall to help, can you draw HMS *Challenger*'s route?



As you enter the laboratory, look to the left. There are four main threats facing our ocean.

- Can you match the ocean threats to their description?



Bottom Trawling

Because the ocean is absorbing lots of carbon dioxide, this means it is getting more acidic. This means that creatures with hard shells are finding it difficult to survive, putting entire habitats at risk.

Deep Sea Mining

Extracting oil from beneath the seabed provides us with fuel, but comes with the risk of oil spills, which can have a big impact on the ocean ecosystem.

Ocean Acidification

Dragging heavy nets across the floor to catch fish can be damaging to everything in the trawler's path, especially cold-water coral reefs which can take decades to recover.

Drilling for Oil

There are lots of metals (such as copper and gold) in the ocean floor, but plans to mine it could cause irreversible damage to the deep sea ecosystem.

We can all make a difference for the health of the ocean. Use the screen at the exit of the gallery to tell us how you will make a difference!

Polar Extremes

Time to wrap up warm as we head into a gallery all about the polar regions of our planet; the Arctic and the Antarctic.



- Can you find the polar bear in the gallery?
- Can you circle the correct answer below?

Polar bears live in the: A) North Pole B) South Pole

Have a look at the two maps close to the polar bears.

- What is happening to their home?
- Why do you think this is happening?
- Can you find penguins in the gallery? They're in a few places!
- Can you circle the correct answer below?

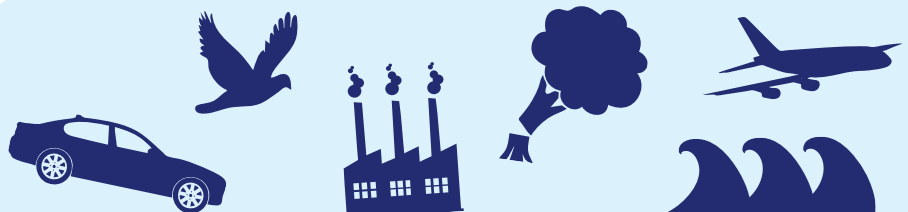


Penguins live in the: A) North Pole B) South Pole

Watch the video on the wall to spot some other animals you will find in the polar regions.

- Can you find the polar ice core? They are *really* important. They give us information which helps us understand how the temperature of the Earth has been changing over time. They are a bit like a climate change time machine!
- How do you think scientists get these large cores of ice?
- What do you think scientists are looking at in the ice cores?
- What do you think this tells them?

- Can you circle the icons that are some of the reasons for greenhouse gas levels increasing?



4D Adventure

Welcome to the Arctic Base! You'll shortly be boarding a craft called 'The Endeavour' which will take you on a journey from the North Pole all the way down to the Tropical Rainforest Base at the Earth's equator.

During the flight, you'll pass through lots of different areas filled with animals and plants that have all adapted to survive in different areas.

Have a look at the maps on the wall in the Arctic base. We call these different areas 'biomes'. A biome is the name given to an area with particular plants, animals and climate.

- What do you think the climate will be like in these biomes?
- Can you draw pictures or write some descriptive words in the boxes below to show what you may see in these places?

Tundra

Desert

- Can you fill in the blanks as to why the climates in these biomes are so different?

One of the reasons is the influence of the .

The equator is the line around the middle of our planet.

One of the reasons that locations at the equator are is because the light that reaches Earth is spread out over a small area

At the poles, the area is larger so these areas are .

hotter

imaginary

colder

sun

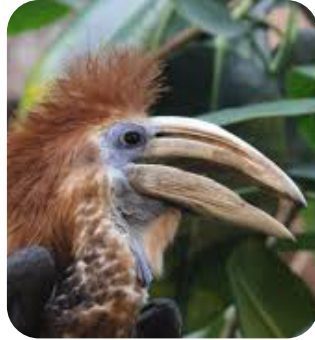
Tropical Rainforest

You have now landed safely in the West African Rainforest! Immerse yourself in this biome as you experience the thrill of a tropical rainstorm, and see if you can spot the animals! There are lots for you to find but some are very good at hiding, so you might need your rainforest guide to help!

- Can you spot the animals below?



Chimpanzee



Yellow-Casqued Hornbill



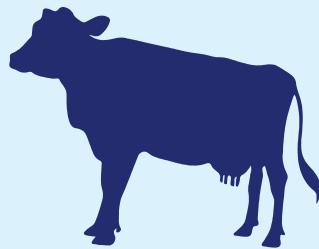
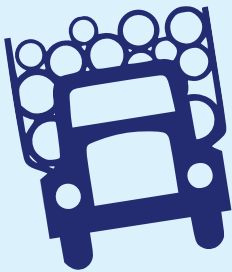
Nile Crocodile



Green Tree Python

Tropical Rainforests are being cut down across our planet.

- Have a chat with some of your friends and see if you can think of some reasons why. These pictures might help you get started.



In the Southeast Asian rainforest, there is a mountain called Mount Kinabalu. As you're climbing the stairs look at the pictures on the wall and imagine you are climbing Mt Kinabalu.

