

## **Guide to the History of Life section**

In this section of the rEvolution website, the story of how life developed on Earth is introduced, expanded on and reinforced with an interactive “travelogue” through the vast sweep of Time, information and pictures about individual prehistoric species, games and interactive resources.

The History of Life is intended to demonstrate through games, text and interactives just how life first evolved on the planet and how plants and later animals tackled the hazardous transition from sea to land. Further activities explain how so much is known about events that happened in the far-distant past, discussing climate research using core samples and the formation and dating of fossils found across the world.

Students will get the chance to become a climate detective, dig up and identify their own fossils in a palaeontological dig, and even explore the effects of different environments on the formation of fossils.

On their return to the present day, students will then investigate the hurdles that plants overcame in order to establish themselves on land and go on to design flowers and seeds to see if they could do better than evolution!

This section of the website was the first to be developed and was launched in October 2003 at an event kindly hosted by the Cambridge University Museum of Zoology. It is part of a project to encourage students at secondary school to take their studies in science to A level and even on to University.

### **National Curriculum**

From the National Science Curriculum:

Pupils should be given opportunities to apply and develop their ICT capability through the use of ICT tools to support their learning....

Pupils should be given opportunities to support their work by being taught to... find things out from a variety of sources....

It has never been the intention of this site to closely follow the National curriculum or to provide students with an online teacher. Instead, this site aims to encourage students to further their interest in natural sciences by giving them a glimpse into some areas of biology, geology, botany, ecology and all the other disciplines that they might not ordinarily have had the chance to explore. We aim not to replace teaching staff, but to offer a wider perspective on subjects that teaching staff are unable to dwell on, given the restrictions and demands on their time.

Having said that, we would be delighted to help any staff that wish to include portions of rEvolution in their classroom teaching as a resource. The rEvolution team are not teachers, but we hope that by working with teaching staff, we can tailor the site to make it a useful – eventually even indispensable – resource.

To this end, here are a handful of examples of areas of the current curriculum that are tackled directly by games, activities and information on the rEvolution site.

Some examples:

At Key stage 4

### **Sc3 Materials and their properties**

Changing materials: changes to the Earth and atmosphere (2p and 2r)

“Pupils should be taught how the Earth’s atmosphere and oceans have changed over time”

“Pupils should be taught how the sequence of, and evidence for, rock formation and deformation is obtained from the rock record”

*See: Fossil formation diagram, Changing Earth diagram, interactive time travel sequence, Climate detective game.*

### **Sc4 Physical processes**

Waves: Seismic waves (3n)

“Pupils should be taught that the Earth’s outermost layer, the lithosphere, is composed of plates in relative motion, and that plate tectonic processes result in the formation, deformation and recycling of rocks”

*See: Changing Earth diagram*

Radioactivity (6f)

“..some uses of radioactivity, including radioactive dating of rocks”

*See: Dating fossils diagram*

### **Entry to The Beach**

The Beach is the entry point to the History of Life section, accessible via rEvolution’s museum lobby. Clicking on the large ammonite will activate an interactive sequence taking students back through time to discover how life on Earth evolved in the seas and later conquered the land. After the completion of this sequence and a simple end-game, all of the currently available games and activities will be unlocked for users to play.

If students want to enter The Beach subsequently, without seeing the sequence and playing the end game, they can do so via the site map. This can be found on the front page of the rEvolution site, as well as on a wall in the museum lobby.

### **Evolution sequence**

In order to study fossils properly, it is obviously important to have a time machine at your disposal. Using our virtual model, students can go back as far as the Precambrian in order to swim with some of the earliest life forms on the planet. On their way back to the present day, they will also drop in on the Cambrian, Devonian, Carboniferous, and Jurassic to have a chance to look at some of the most important (and infamous) organisms throughout time.

At the beginning of each Age, a short introduction tells students something about the Age, its climate and the important things that happened there. The scenes are interactive, allowing students to select any organism that takes their fancy and discover new information about it in the form of pictures, sketches and text. Although each scene is on a limited timer, students are free to go back and forwards in time to review material or revisit favourite fossils.

At the end of the sequence a short mini-game will test their ability to recognise six fossils, and to place them in their correct Age. If they succeed, all of the games and diagrams in the “History of Life” section will be unlocked and they will be returned to the present day ready to take up new challenges!

### **Additional rollover material**

During the sequence, students are free to click on and select any of the organisms in the scene before them. When they move their mouse over an organism, a message will appear to remind them that they can click on the animal or plant to see more information about it.

If the student clicks on anything, several things happen at once. Firstly, time stops – each scene is on a timer, and if not interrupted will take the student forwards to the next Age after about 2 minutes. However, by selecting an organism to discover more about, this timer is frozen until they return to the main scene. At the same time, the picture zooms in for a close up on the selected organism. When in this mode, any further click on the organism will return the player to the main scene.

While this is happening, a ‘folder’ full of information is opened on screen. This familiar brown card folder will contain pictures and photographs of the fossil, taken from some of the world-famous Cambridge University collections. Some folders also contain a simple sketch of the organism to represent it in a ‘drawn from life’ way. Additional text about the beast (or plant) can be read, giving information about lifestyle, feeding habits, importance as an evolutionary landmark and much more. Extended versions of this information can be found in the Fact-Files, located in the [Resource Centre](#) on the site.

### **Minigame**

After travelling back in time and then zipping forwards to the present day, one last test remains before students can fully explore the games and activities in this section - and claim their professional time-traveller certificate.

This mini-game is a simple sorting exercise, based on some of the plants and animals the student will have encountered during their time travel. A randomly selected series of six organisms will be presented to the student, one by one, along with some summary text. The student simply has to drag the organism to the Age that they think it comes from – incorrect guesses will solicit suggestions to help students get it right.

Students drag and drop the organism to the Age using a mouse. Completion of the game correctly will unlock all of the currently available games and activities in the History of Life section.

### **Games and activities**

Each of the games and activities associated with this section are explained in more detail in the [series of guides](#) also to be found here in the Staff Room.

### **Related activities and resources**

rEvolution tries to provoke interest in natural science not just by providing games, activities and information about science, but by giving students a wide range of other resources to explore at their leisure. The list of resources available is constantly growing as new material is added to the site.

Currently, the list of related resources includes:

- **Videos.** We have tracked down some very interesting people in the oddest of jobs to give students an idea of some of the more exciting things they can do with a degree. Of especial relevance to this part of the site are interviews by a Geological and Palaeontological conservator and a gallery tour provided by a hugely enthusiastic museum curator.
- **Famous scientists.** Be inspired by hearing the stories behind great scientists such as Darwin and Sedgwick. Did you know that Darwin was an expert on the humble earthworm, or that Sedgwick got into trouble for teaching science to women?
- **Virtual Museum tour.** Join Rod for a tour of some of the best – or the most bizarre – objects on display in one of the world's oldest geology museums. Discover what bog butter is, when hippos roamed through Cambridge and why a mountain in Canada holds the secret of early life on Earth.
- **Collect your own fossils** and other articles. These easy-to-follow articles provide you with all of the information you need to get out there and collect your own fossils. They include a look at safety, necessary equipment, the law and how to spot a fossil, as well as how to identify your finds and display them to their best advantage.
- **Fact-Files.** Each Fact File contains an expanded version of the text accompanying each organism in the History of Life interactive sequence, complete with photographs and sketches. Do you know what trilobites ate – or what they feared? Do you want to know how a 10cm tall plant was able to change our world forever? Then settle back and browse through these files for some fascinating facts.
- **Websites** and all the rest. We have scoured the internet to find sites that provide information, ideas and more to help you supplement your teaching and to further encourage students to explore the prehistoric world. We have included links to museums and other places to visit as well as societies to join.
- **Glossary.** Our comprehensive glossary includes many words relating to rocks, geology, evolution and other areas of biology. The explanations are comprehensive and easy to follow. We will also happily add words to the glossary – so get in touch and let us know what we missed.