



KS2 Life processes

What is life?

As you travel around the exhibition you will see many examples of the weird and wonderful lifeforms to be found on this planet. But what is life?

Michael found a very curious looking object on his way back from the exhibition. He took it to show his delightful science teacher, Ms Naidoo. She didn't recognise it immediately, so she suggested that Michael complete the following table. Ask your own class to bring in interesting objects and subject them to the same test.

Can it move?	Yes	No	Don't Know
Does it produce off-spring?	Yes	No	Don't Know
Can it sense things around?	Yes	No	Don't Know
Does it grow?	Yes	No	Don't Know
Does it need oxygen?	Yes	No	Don't Know
Does it produce waste products?	Yes	No	Don't Know
Does it need a source of food?	Yes	No	Don't Know

Is it living? You decide.



KS2 Living things in their environment

You are what you eat

We are all a reflection of the things we eat, and as a species we have our place in the food chain. Fortunately, we are generally to be found at the top of this chain. But would this be the case on another planet?

Challenge the children to create a food chain for an alien world. Working together, decide what creatures would inhabit this imaginary place. These might be modelled on animals from food chains found here on Earth. Decide which creature would be the top predator and then work backwards until every link in the chain has been identified.

Once this task has been completed, divide the children into small groups and give each group the task of making a model of a creature from the chain. Once all of these creatures have been made, link the chain together in sequence.

Additional questions:

What happens when the food chain is broken?

How might the chain be broken here on Earth?



KS3 Living things in their environment

It's only a game

Food chains are a fact of life and are likely to exist for life on alien worlds too. Despite our best intentions, nature is always red in tooth and claw. But if big teeth and sharp claws make a top predator why is the sabre-toothed tiger not the dominant species on our planet?

Ask the children to discuss and identify the key elements of a food chain. Predation, competition for resources and changes to habitat should all be considered as should the Darwinian notion of “survival of the fittest” – the survival of those best fitted to their environment.

Having established the key elements of a food chain, challenge the children to create board games based on the conclusions they have reached. Essentially a form of *Snakes & Ladders*, the game should reflect the tenuous nature of life at any point on the chain.

Once constructed, the games can be laminated and used later for revision and consolidation purposes.

KS3 The Earth and beyond

You are here

The solar system is an enormous and complicated place so ensure you aim for an achievable degree of accuracy, rather than a fully detailed and exact scale model, when carrying out this activity.

Challenge your pupils to create a model of the solar system in the form of a mobile. The Sun, which will be the largest body in the model, should be at the middle of the mobile with the various planets, from Mercury to Pluto, arranged in sequence from the centre.

Before construction begins divide the pupils into small groups and give each group the task of investigating a particular planet. Key questions for the groups to consider might include:

What is it made of?

How does its surface differ from other planets?

Do these differences have an effect on the planet's appearance?

How big is it in relation to the other planets?

Does it have any of the essentials for life on Earth – liquid water, oxygen, sunlight, carbon containing chemicals?

Use balloons of various sizes covered in papier mâché to create the planets, making certain that the differences in the sizes of the planets is reflected to some degree in the differing sizes of the papier mâché balloons. Once all the planets have been constructed use wire coat hangers to attach them to the “Sun” in the following sequence (from the centre outwards): Mercury; Venus; Earth; Mars; Jupiter; Saturn; Uranus; Neptune; Pluto.



KS4 Variation, inheritance and evolution

Rock record

Fossils have the power to fascinate. Preserved in rock, they are a tangible record of a distant past that might otherwise exist only in our imaginations. Who, after all could have imagined creatures such as the dinosaurs without seeing their fossils?

For this activity, challenge your pupils to create a fossil record for an alien world. Using the evolution of specific creatures here on Earth as a basis for comparison (the bird would be a very useful starting point), invent a small number of imaginary yet realistic alien creatures. Assign groups to examine one of each of these creatures.

Suggest that your pupils discuss the various stages that their creature is likely to have passed through as it evolved over millions of years. Key questions to consider are:

What were the environmental pressures on this creature?

What sort of predators did it face?

Did it suffer as a result of a cataclysmic event, such as a large asteroid strike?

Was it wiped out as a result of natural changes to its habitat?

Did a new and better adapted predator arrive on the scene or does this alien creature continue to thrive?

Having established a natural history for the creatures, get your pupils to create a fossil record for each using plaster of Paris for the fossils and modelling clay for the moulds.

KS4 The Earth and beyond

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Challenge your pupils to create a model of the solar system in the form of a mobile. The Sun, which will be the largest body in the model, should be at the middle of the mobile with the various planets, from Mercury to Pluto, arranged in sequence from the centre. Include the principle moons of any planet that has them and don't forget to include the asteroid belt, which lies between Mars and Jupiter. Additional items may include the occasional comet or meteor.

Before construction begins divide the pupils into small groups and give each group the task of investigating a key element of the solar system. Key questions for the groups to consider might include:

What is the planet/asteroid/comet, etc made of?

How does its surface differ from other bodies in the solar system?

Do these differences have an effect on the body's appearance?

How big is it in relation to the other bodies in the Solar System?

If it is a planet, does it have any moons and should these be included in the model?

Could any form of life have evolved on these worlds?

Use balloons of different sizes covered in papier mâché to create the various elements of the solar system, making certain that the differences in the sizes of the planets is reflected to some degree in the differing sizes of the papier mâché balloons. Once all the elements have been constructed use wire coat hangers to attach them to the "Sun" in the following sequence (from the centre outwards): Mercury; Venus; Earth; Mars; the Asteroid Belt; Jupiter; Saturn; Uranus; Neptune; Pluto. The location of comets and meteors should be decided by your pupils.