

# Enquiry Question:

## Can anything become a fossil?

### Objective

To explore the role of a geologist, understanding what soil is; observing the different types of rocks within the Cemetery and understanding how a fossil is formed.

**1** Additional resources are available to support learning activities - look for the orange number to guide you.

### Equipment

- Pen or pencil
- Paper and clipboard or a notebook
- Additional resources
- Optional: Magnifying glass, torch
- Clay or card, ink or paint, roller or paint brush

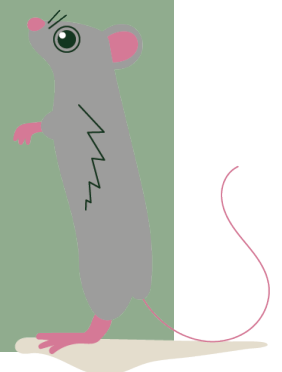
**Time** - this activity can take around **one hour and a half** to complete unless you wish to explore aspects in more detail.

### Prepare

Introduce the Sheffield General Cemetery and explain to the learners that today we are going to observe the gravestones in the Cemetery to identify the type of rock they are made from. We are also going to explore the different types of soils. **What do you know about soil?**

Soil is the loose surface material that covers a lot of land on Earth. The creation of soils occurs over many years. Soils are a mixture of different things, including rock, organic matter (dead plants and animals), water and air. Different soils have different properties depending on what they are made from. Some soils provide a place for plants to grow. The soil holds water in place for their roots and it contains nutrients needed for their growth. Some soil can provide a home for many animals.

**1**



## Explore

Share a map of the site so the learner is familiar with where you are going to go. Explain that we are going to visit the stops on the map to explore the different types of rock.

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Ask learners to think about these questions:

**What type of rock do you think this is?**

**Is the rock local?**

**Has the rock weathered?**

## Discover

We are going to use Spot that rock! to help us identify some of the different types of rock the gravestones and monuments are made from.

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There are lots of types of rock and each type has different properties and uses. For example, some are strong and hard but others are soft and sandy. There are three main different types of rock and how they are formed is what makes them different.

1. **Sedimentary rocks** are made from layers of broken up bits of other rocks and the remains of animals and plants. Over time these are squashed together to form rock. Some can crumble easily. Examples are sandstone and chalk.
2. **Metamorphic rocks** are changed by intense heat and pressure underground. Examples are slate which is often used for roof tiles and marble which is often used to make statues.
3. **Igneous rocks** are made when molten rock or magma cools down. This can happen slowly underground or quickly when it erupts like a volcano. An example is granite which is used in building and paving.

After looking at stop 9 on the map, let learners explore the rocks in this area. What do you notice about these rocks? Who has large monuments made? Who uses expensive rock that has been brought in from other places? **Safety reminder: Stay on paths and mown grass areas. Do not walk onto graves.**

**Do you think rock is easy to identify?** There are people who train to become geologists. A geologist is a scientist who studies the Earth's structure, history, and natural resources. This includes studying the Earth's solid features, like soil, rocks, and minerals.

## Share

Find somewhere to sit or stand in the Cemetery park such as the Geological Stone Spiral to discuss with the learner the different types of rocks within the Cemetery. The main rock types used in the monuments and buildings at Sheffield General Cemetery are represented at the Geological Stone Spiral.

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Take a look at the map of the stone spiral. There are a number of rock types here and in rock 26 there is something quite special. There are crinoid fossils! A group of marine fossils that first appeared in the seas around 300 million years ago!

**What is a fossil?** Fossils are the preserved remains of ancient life. They are often actual body parts such as bones or teeth but can also be impressions left behind from part of an organism. Fossils are formed through a multi-step process that takes place over thousands of years.

### Can anything become a fossil?

- It is very rare for living things to become fossilised. Most living things rot away and nothing is left behind.
- However, a fossil can form under special conditions.
- Sometimes when an animal dies and its body decays, its skeleton can leave an imprint in the sediment.
- If this imprint is filled in with minerals from sediment and water, it can harden to form a fossil.
- Fossils can then be brought to the Earth's surface by earthquakes, mountain formation, erosion or construction.

Let learners explore the rocks in the Geological Stone Spiral to see what they can identify. Give them time to make some sketches or spot ideas of things they could use to create a fossil replica from.

**What type of rock can you identify?**

**Which rocks look similar?**

**What do the rocks feel like?**

**How would you describe the rocks?**

If possible, share examples or images of replica fossils. Also tell the story of Mary Anning, a remarkable fossil collector.

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## Create

Create a replica or imprint fossil.

This could be done by either

- pressing a leaf into a piece of clay
- painting a leaf and printing it onto a piece of card

Safely gather some leaves from the site for learners to use to mimic the process of a fossil forming. Encourage learners to identify leaves they think will imprint well.

This will help learners recognise what would likely become a fossil or not. ***Safety reminder: Please check the ground before picking up leaves. Don't pick leaves from the trees or plants.***

### How to make a replica fossil using clay:

- Give each learner a small ball of modelling clay.
- Roll, soften and flatten the clay. This represents the sediment.
- Press a leaf into the clay.
- Very carefully remove the leaf from the clay and you will have a replica fossil.

### How to create an imprint of a leaf using printing:

- Using a paint brush or roller, paint the underside of a leaf.
- Place the painted leaf onto a piece of card.
- Then place another piece of card on top.
- Gently rub the card and then lift to reveal the imprint.



## Reflect

Allow learners time to reflect and to share what they have created. Then gather together in a circle. Remind the learners of the enquiry question and some of the concepts that may have arisen from discussion: **Can anything become a fossil?**

After a short moment of thinking time, pass a small pebble around the circle so that each learner has a chance to say a final thought about what they have discovered.

You could take photos to share with others on social media using **#learningatGenCem** and tagging **@sheffieldgeneralcemeterytrust**