

# A Science2Life Science iT! Activity



Learn about fossils  
with this awesome  
**DINO DIG KIT!**



## CONTENTS

- ◆ Dinosaur Skeleton
- ◆ Dinosaur Puzzle
- ◆ Moulding foam
- ◆ 3 bags of casting powder
- ◆ 30 ml measuring cup
- ◆ Wooden lollipop stick
- ◆ Wooden pick
- ◆ Toothbrush
- ◆ Plastic container

## What you need to gather

- ◆ Safety Glasses
- ◆ Scissors

## Palaeontological Casting

Imagine the scene of a crime that happened years ago. There's not much to go on – a few bones, an exposed rock face and a couple of bullets. But to a crime-scene investigator, these clues tell a story. The size and shape of the bones reveal whether the victim was a man or a woman. Chipped bones indicate the bullet's point of entry. A gouge on the rock face traces the path of a bullet that missed the target.

We can think about fossils in the same way. They tell a story, just like the clues at the scene of a crime. It may seem odd to imagine Earth as a giant crime scene, but in a way, that's exactly what palaeontologists are doing when they search for and study fossils. First, researchers are looking for evidence, much like crime-scene investigators do. Second, palaeontologists and forensics experts alike study this evidence to answer, in one way or another, one basic question: **What happened?**



By studying fossils, we can explore questions like:

- What were the first life forms on our planet?
- Where did these life forms come from? What happened to them?
- How has life on Earth changed over time?
- How has the Earth's climate changed over time?
- Where have new species of plants and animals come from, and how do they relate to species that died out?
- What happened to dinosaurs?

Because they provide a physical record of life on Earth, fossils are a great source of insight when studying questions like these.

The ability to produce exact moulds, and so reproduce perfect replicas of important fossils, has long been recognised as a worth-while and important technique in palaeontological studies. Plaster casting makes available, to research workers and institutes all over the world, exact copies of unique specimens which under normal circumstances would not be available for loan.

Many fossils occur as natural moulds, impressions must be taken from them, to allow them to be studied as positives.

A good fossil replica has to be detailed enough to show all the features of the original. But it can't be made of delicate material it has to be strong enough to support its own weight and withstand environmental stresses. Today, there are lots of different methods and materials used to achieve these two goals.

One of the most common methods of making a fossil replica is the mould and cast method.

To make the replica dinosaurs, housed in many museums of natural history around the world, sculptors create an artificial skeleton out of foam and clay and then use it as the basis for the mould. A similar process can also allow researchers to recreate bones that are missing or damaged from the original skeleton.

Right now, palaeontologists can use materials like dental moulding to create fossil moulds in the field and in this activity, you will do the same thing!

### DID YOU KNOW?

Dippy the Dinosaur housed in London's Natural History Museum is a replica of the original *Diplodocus* (*DIP-lo-DOCK-us*) which is on display in the Carnegie Museum of Natural History in the USA.

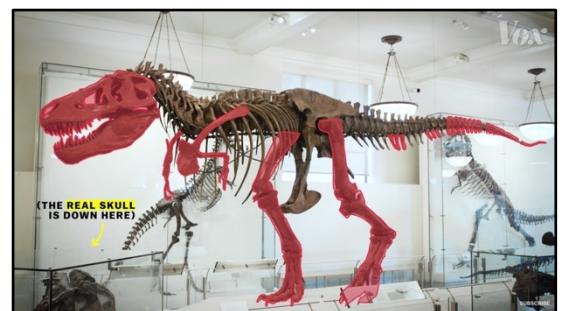
The original skeleton was found in 1898 in Wyoming. In total 12 casts have been made of Dippy. By gifting copies to the heads of states of seven other countries as well as the UK, Carnegie hoped to demonstrate through mutual interest in scientific discoveries that nations have more in common than what separates them. He used his gifts in an attempt to open inter-state dialogue on preserving world peace – **a form of Dinosaur diplomacy!**



*Dippy on display at the Carnegie Museum of Natural History*

### How Scientists solve dinosaur puzzles – follow this link to find our more.

When palaeontologists excavate a dinosaur, they rarely find the full thing. For example, take one of the most famous dinosaur skeletons, the T-rex Sue. Palaeontologists found around 90 % of the dinosaur bones, making it the most complete specimen ever discovered. The fact that they uncovered so much of Sue is remarkable, but when you go to see it on display, you don't see 90 % of a skeleton – you see the full thing.



Your little packet of skeleton bones will allow you to rebuild a full dinosaur. If you lost one of the pieces, what could you do? You could do what a palaeontologist does – fill in the blanks with homemade pieces! Originally using carved pieces of wood. Today they use the bones of other T-rexs' and make plaster casts of those bones and use them in their models.

# A Science It! Activity

## Creating a Cast of a Dinosaur

### What you need:

- ◆ Moulding foam
- ◆ Bag of casting powder
- ◆ 30 ml measuring cup
- ◆ Wooden lollipop stick
- ◆ Wooden pick
- ◆ Toothbrush
- ◆ Plastic container
- ◆ Water
- Items not in the kit**
- ◆ *Magnifying glass - optional*
- ◆ **Safety glasses**
- ◆ *Scissors - optional*



**NOTE:** Handle your casting foam with care. Just touching the foam will leave an impression.

### ***Making the Impression***

1. Select a dinosaur – or any item you want to make a copy of.
2. Carefully place the casting foam in the centre of the plastic dish or plate.
3. Place the dinosaur onto the foam, ensuring you have a foam outline surrounding the dinosaur.
4. Push the dinosaur gently onto and into the foam. Use the sticks provided to push thinner sections of your dinosaur in – you don't want to have finger impressions too!
5. Carefully remove the dinosaur from the foam – again you may need the help of the sticks to do this.



### ***Inspecting your impression***

Your casting foam has been engineered to make accurate impressions. Using a magnifying glass (or take a photo of it with a phone and enlarge the image) study the 3-D impression. You will notice every imperfection, bump, scratch etc., has been captured!



## ***Shake and Cast***

1. Put on safety glasses.
2. Measure 10 ml of water.
3. Open the bag containing the casting powder. Pour in the water. Reseal the bag firmly.
4. Shake the bag vigorously for 30 seconds. Then knead for a further 1 ½ minutes making sure any powder in the corners has been captured. The contents of the bag must not be lumpy.
5. After mixing, cut off one corner of the pouch with scissors.
6. Pour the mixed casting material so that it completely fills your impression.
7. Now wash your hands



## ***Unveiling the Casting***

1. Allow at least 1 hour curing time.
2. With safety glasses on, carefully and slowly (**you don't want to break your cast!**) peel away the casting foam with your fingers. As you get closer to the skeleton you will then need to use the wooden tools to remove the foam that is found within the rib cage and other crevasses.
3. The tooth brush is then used to remove any remaining foam.
4. When completely dry – after 24h hours – you can then paint your fossil!



Casting stone can be used to collect many kinds of impressions. Forensic scientists use it a lot to gather impressions of shoe prints and tyre tracks.

**Want to run this as a birthday party activity? Contact us with numbers and we will send you a quote!**

If your casting foam is accidentally damaged by an over enthusiastic child, you can create a casting mould using Play-doh.



**www.science2life.com**



@ScientificSue



[Scientific Sue](https://www.facebook.com/ScientificSue)