

Dig up the dinosaur

Become a fossil hunter and dig up a dinosaur

How does a scientist set about digging up a large fossil, like a dinosaur? How can scientists ensure that they obtain the maximum evidence from their discoveries and do not accidentally destroy vital clues?

Set up a tray full of dry sand, in which is hidden the dismembered bits of a toy dinosaur skeleton.

Alternatively, the bones of one dead animal or small chicken could be scattered throughout the sand (having first boiled and sun-dried the bones to sterilise them). After all, extinct dinosaurs are closely related to modern birds! Leave one or two bits of bone sticking out, as might happen with a real skeleton buried in desert sand.

Another variation is to assemble part of the skeleton and leave the pupils to find the missing bits.

Make a simple grid across the tray with string or rubber bands, to make, say four squares by three. Provide the pupils with a similar grid, to the same scale, on paper, or drawn with chalk on a board.

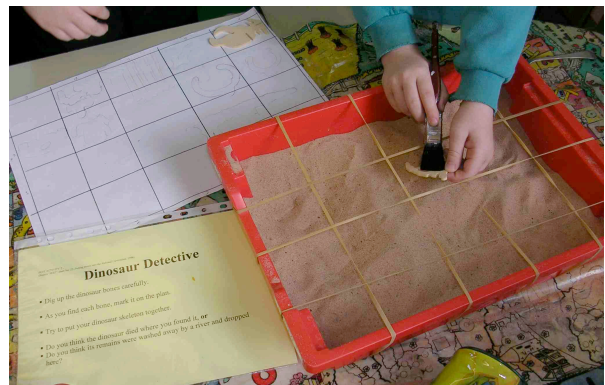
Give pupils some simple digging equipment, such as an old paintbrush and a couple of spoons. Tell them the story of the 19th century American scientists who dug up dinosaur bones as quickly as possible, without noting too carefully where they came from. Scientists from rival universities even went and smashed up their rivals' fossil bones, in order to be first to display a dinosaur.

Then ask pupils to dig up the buried skeleton, but to be more "scientific" about their methods than the old timers. As each piece is revealed, it should be put down on the grid at the correct place and drawn around to show the outline of the bone. The excavated sand should be put in a spare pot.

When the pupils have finished, they should see if they can reconstruct the dinosaur (or chicken!).



A reconstructed *Triceratops* model (Photo: P. Kennett)



Digging up the dinosaur – very carefully! (Photo: P. Kennett)



The reconstructed skeleton proudly displayed (Photo: P. Kennett)

The back up

Title: Dig up the dinosaur

Subtitle: Become a fossil hunter and dig up a dinosaur

Topic: Digging up buried 'bones' in a systematic manner and reconstructing the skeleton

Age range of pupils: 6-11 years

Time needed to complete activity: About 20 minutes

Pupil learning outcomes: Pupils can:

- work systematically to reveal hidden objects;
- map their findings in the positions where they were found;
- reconstruct a model skeleton;
- explain whether the animal was buried *in situ*, or was eroded and scattered before burial.

Context:

This activity provides practice in working systematically, in contrast to simply grabbing an item as it is discovered. It could be used to amplify work on fossilisation. The use of a grid could be used to reinforce a lesson in maths or geography.

Following up the activity:

- The bones can be arranged in the positions in which the creature "died", and pupils can be encouraged to say how it might have become fossilised.
- The bones can be jumbled up, to simulate erosion of the remains before burial.
- Some bones can be cut or broken, and pupils asked to think about the cause of death, such as predation.
- Carry out a websearch to see what the dinosaur might have looked like in life.
- Visit a museum where good specimens of vertebrate fossils may be seen.

- If possible, visit a real site where fossils may be found.

Underlying principles:

- The evidence on how fossils have been preserved must be recorded carefully at the time of discovery.
- We use our understanding of the lifestyle of modern organisms to help us to understand how extinct ones might have lived.
- Evidence for the life and death of the animal includes the distribution of the parts in the rock and any damage to those parts by predation etc.

Thinking skill development:

Pupils use their discoveries to construct the skeleton of the original creature, and then 'bridge' between the remains and the once-living animal.

Resource list:

- a large tray, washing up bowl or cardboard box (e.g. 40 x 30 cm)
- plenty of dry sand
- a wooden or plastic dinosaur skeleton, (which can be dismembered), obtained from a toyshop, or cut out on thin plywood from the template on page 3
- **or** a chicken carcass, boiled, sun-dried and dismembered
- a few old paintbrushes and spoons
- a spare container for surplus sand

Useful links: The science of digging up dinosaurs:

<http://www.nationalgeographic.com/xpeditions/lessons/17/g68/serenodig.html>

Source: Hawley, D.J. (1995) Dinosaur detectives discovery dig: a palaeontological simulation. *Teaching Earth Sciences*, 20 (2), pp 53-55, Earth Science Teachers' Association.

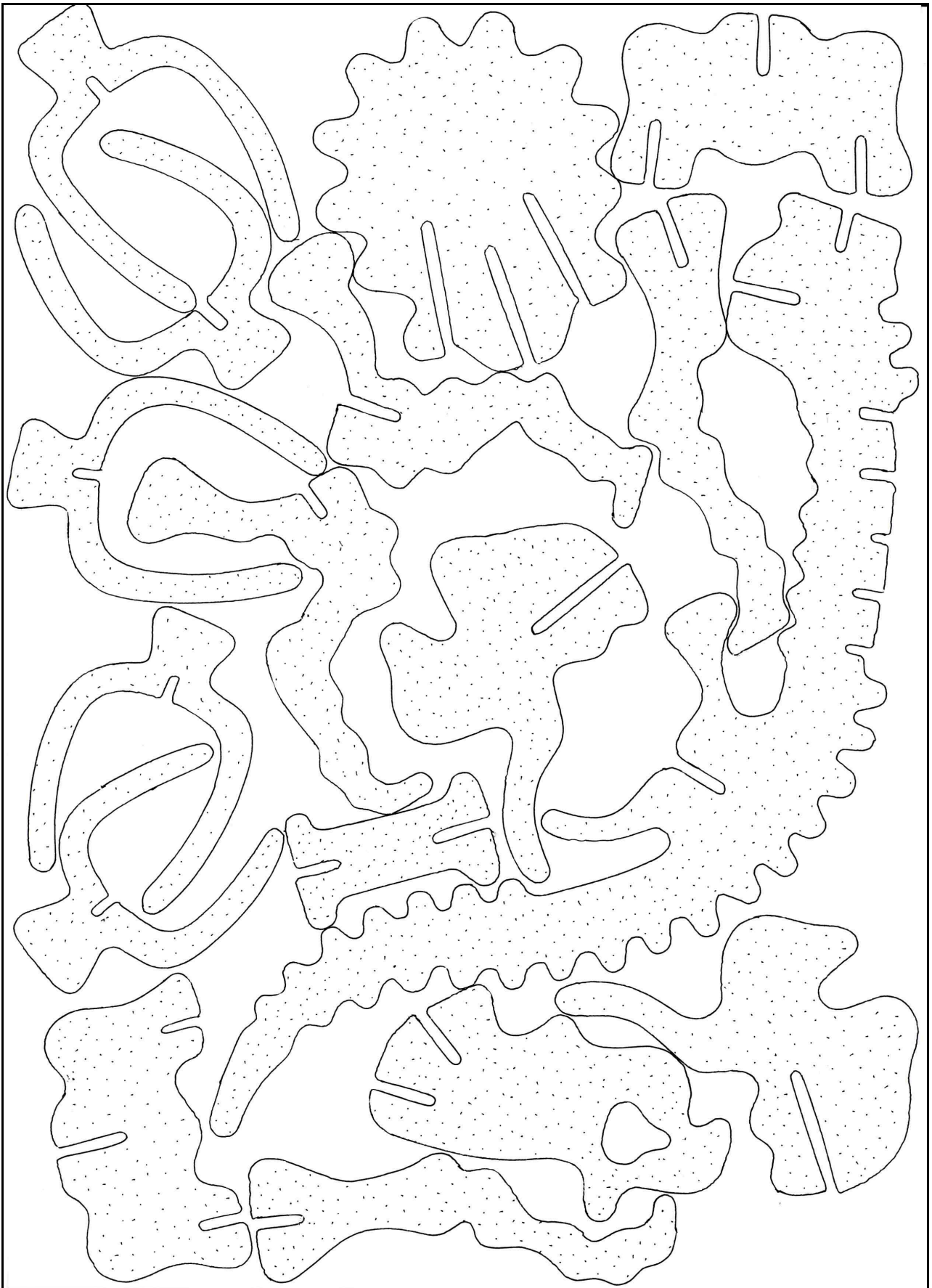
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Template for making a model of the skeleton of *Triceratops*