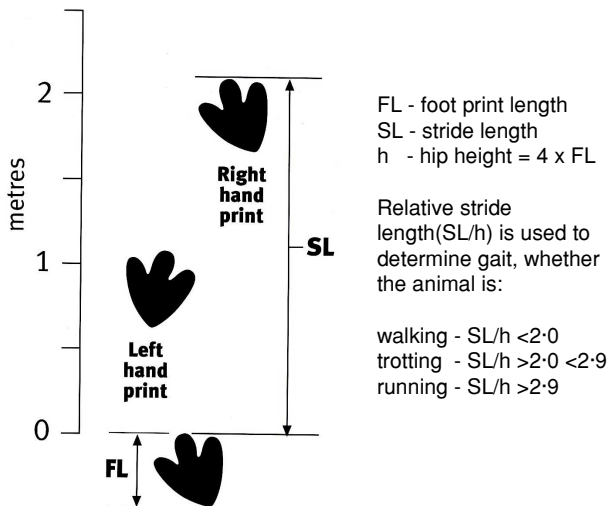


What were the animals doing? Interpreting footprints and other marks in the sand

Tell the pupils that a lot of information about how animals like dinosaurs lived, comes from their fossils and their trace fossils, like footprints. Explain how footprints can tell you how an animal is moving by using the formulae below:



Before you start, make sure you have agreement from the sports staff to use their long jump pit. Divide the pupils into groups and tell them that they are going to make their own footprints and other marks in the sand of the long jump pit for another group to interpret.

You could show them photos of footprints, as below, or watch the video of the discovery in the UK in an Oxfordshire quarry - 'Useful links' on page 2.

They must choose three different scenarios for their animals to do. Ask for suggestions, e.g. walking,

trotting, running, falling over, carrying someone piggy-back, dragging something along and so on. If there is a drag mark, then perhaps the animal had a tail? If the footprints are deep, the animal may have been pregnant or have just eaten a large meal. There could be signs that there was a fight, (ensure that the pupils are sensible about this idea). The footprints may show that an animal was injured and was hopping or limping.

Now take one group to the school's long jump pit. Use a rake to make the sand as level and smooth as possible. Divide the sand pit into three different long sections which could be labelled, A, B and C. The pupils now carry out their three planned scenarios.

Now invite a second group to interpret what has happened and to record their results in a chart.

The back up



Dinosaur trackways, Fumanya, Spanish Pyrenees
Pete Loader



Dinosaur trackways, Fumanya, Spanish Pyrenees
Pete Loader



Dinosaur footprint, Arizona

Pete Loader

The Back up:

Title: What were the animals doing?

Subtitle: Interpreting footprints and other marks in the sand

Topic: Footprints and other traces of animals, found as fossils, can tell us a great deal about what the animals were doing at the time. Fossils are usually found in sedimentary rocks which give clues to the environment at the time the animals were alive. All this evidence gives us a good idea of how the animal lived and, maybe, what it ate.

Age range of pupils: 8 upwards

Time needed to complete activity: 15 minutes for the group to decide what footprints they will make and then a few minutes to make the prints. 20 minutes for a second group to take the necessary measurements and work out what happened.

Pupil learning outcomes: Pupils can

- explain that, for the purposes of this activity, the footprints and marks in the sand represent the fossil traces of animals that lived a long time ago;
- using their measurements, calculate whether the animal was walking, trotting or running;
- based on the evidence in the sand, make assumptions about what caused the other marks;
- assuming that the sand in the pit was a sandstone in the past, determine the type of environment in which the animals could have lived;
- suggest that there may be more than one correct answer;
- measure distances accurately and calculate simple equations;
- listen to others and try to incorporate all the ideas.

Context: This activity introduces the concept that an imprint (trace fossil) is just as much a fossil as the remains of the actual body and can sometimes give very valuable information on the lifestyles of animals. It provides cross-curricular links with Mathematics, Geography, Environmental Science and English (story-telling).

Following up the activity:

Pupils could try some of the other Earthlearningideas:

The meeting of the dinosaurs - 100 million years ago

https://earthlearningidea.com/PDF/Dinosaur_Footprints.pdf

A dinosaur in the yard

https://earthlearningidea.com/PDF/Dinosaur_in_the_yard.pdf

Trace fossils and burrows or borings

https://earthlearningidea.com/PDF/186_Trace_fossils.pdf

Underlying principles:

- Footprints or traces of creatures are fossils just as are their shells and bones,
- Footprints and other traces give clues to the lives of the animals of the past. They may give more clues to their lifestyles than the fossil bones themselves.
- The rock surrounding the fossils gives clues about the ancient environments in which the animals lived.

Thinking skill development:

Making the footprints and other traces and deciding what to do is a constructive activity. Discussion about what traces to make and then interpreting them involves metacognition. Cognitive conflict occurs every time there are several possible, correct answers. Applying the principles of this activity to real-life situations, e.g. finding footprints in a quarry, is a bridging exercise.

Resource list:

- sand pit and rake
- copies of the results chart
- tape measures
- pens, pencils and clipboards

Useful links:

BBC video 'Dinosaur Superhighway'

<https://www.youtube.com/watch?v=FicnEcccapM>

Source:

Adapted by Elizabeth Devon from an activity suggested by Bert Nagel, founder of the Discovery Corner, SimpleScience, Netherlands

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