

# TEACHER NOTES

Maths/Geology Crossover

## Science - Forces and their effects

Weigh a Dinosaur!



### Contextual Summary

This is a curriculum-based science resource that enables students to conduct a two-stage experiment: firstly to record the dimensions of an actual footprint cast; secondly to undertake a classroom experiment that determines an approximate mass of the animal. The resource highlights how force and pressure combined with geological states and the sedimentary preservation process results in a footprint from which a cast can reveal much about the weight, size and features of the footprint owner. The skills required to undertake the experiment are core to curriculum areas within science and mathematics whilst revealing geological aspects of interest. All link to the 2014 National Curriculum and, in Scotland, Curriculum for Excellence. The resource is aimed at key stage 3.

The resource links to dinosaurs found on the Isle of Wight specifically, ensuring relevance on the visit for students whilst ensuring the wider curricular relevance is maintained. Questions have been chosen because they link directly with the key curriculum areas.

### Task Implementation

Teachers will need to prepare students for this two-stage task, by ensuring that they know what dimensions to record and how, when on-site at the Dinosaur Isle museum. This should take 10-20 minutes. The task can then be continued as an experiment back in the classroom.

Alternatively, students could undertake the experiment at the local beach if teachers bring the relevant apparatus with them. Another opportunity is to recreate the experiment using human footprints using the beach and/or sandpit and plaster of Paris or similar for comparison purposes. This can link to resource number 10239.

### Ability Levels

There are 2 versions of this resource, one medium and one high ability resource for key stage 3. These could be adapted further by teachers if required, i.e. for SEN. For example, students could perhaps work in teams to find the answers.

### Key skills practised in this unit:

- ▶ Understanding how to calculate pressure from given force and area
- ▶ Debating and reasoning skills based on result
- ▶ Calculation of mass

### Relationship to Curriculum

The above skills are required to be taught and practised as per the National Curriculum, for science key stage 3.

#### SUBJECT

Science

#### UNIT

Forces and their effects

#### OPPORTUNITIES FOR USE

- ✗ Pre-Visit
- ✓ On-Site Activity
- ✓ Post-Visit
- ✗ Peripheral Task



60-90 Mins

#### APPLICABILITY



KS3



S1-S3

#### CURRICULUM / SYLLABUS

- ✓ National Curriculum 2014
- ✓ Curriculum for Excellence

Applies to Resources numbered:

1 0 2 3 8 1  
1 0 2 3 8 2

## Learning Opportunities

### Pre-Visit

Preparation for the recording of information on the footprint.

### During the Visit

Completion of the on-site section (step 1) of the resource/s linked to this document: *Weigh a Dinosaur!*

Resource ID: **102381** (KS3 high ability), **102382** (KS3 medium ability)

### Post Visit

Completion of the post-visit section (step 2) of the resource/s linked to this document: *Weigh a Dinosaur!*

Resource ID: **102381** (KS3 high ability), **102382** (KS3 medium ability)

## Enrichment Opportunities

Students will enhance their understanding of the key processes involved in this calculation by using an identifiable dinosaur cast. The task introduces the concept that a trace fossil is just as viable as actual bodily remains and can contribute valuable knowledge about the lifestyles or organisms.

## Learning Outcomes

Students will be able to demonstrate their ability to understand the process of working out a mass from the cast of a dinosaur footprint. They will show understanding of how pressure from a given force and area can provide information about an entire animal's physical characteristics. They will use debating and reasoning skills by looking at their results and considering variables or potential problems with the accuracy of their calculations.

For further details visit [www.edudest.info](http://www.edudest.info) and click:

- ▶ *Resource Finder* - to locate specific resources identified above
- ▶ *Venue Finder* - to learn more about education at this venue
- ▶ *Subject Finder* - to find other relevant Isle of Wight venues

