

Teachers notes: Meteorite Impact



CUILCAGH
LAKELANDS
GEOPARK



This activity lets pupils investigate meteorites and their impact with a fun hands on experiment.

Level: NI: Key stage 2
ROI: 3, 4, and 5th class

Time required: 15/20mins activity, plus 5/10 mins set up

Curriculum links: This experiment links with the National Curriculums of Northern Ireland (The World Around Us) and Ireland (Geography, History and Science)

Northern Ireland	Ireland
<p>Change Over Time: Ways in which change occurs over both short and long periods of time in the physical and natural world (KS2): How the world has changed over time; How change is a feature of the human and natural world and may have consequences for our lives and the world around us</p> <p>How change is a feature of the human and natural world and may have consequences for our lives and the world around us (KS2): comparing an aspect of the community over a long period of time; Some of the characteristics of past societies and distinctive features of life in the past.</p>	<p>Geography - Natural Environments: The local natural environment; Land, rivers, and seas of my county; Rocks and Soils; Weather, climate and atmosphere</p>
<p>Place: Features of, and variations in places, including physical, human, climatic, vegetation and animal life (KS2): Places then and now</p>	<p>History - Local Studies: Buildings, sites or ruins in my locality; My locality through the ages; Continuity and change in the local environment;</p>

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Interdependence: The effect of people on the natural and built environment over time (KS2): Ways in which the use of natural resources through time has affected the local and global environment; Local habitats; Ways in which the use of natural resources through time has affected the local environment

Science – Living Things: Human life; Plant and animal life

The learning intention:

Students will understand:

- what a meteorite is
- how we find meteorites
- the different types of meteorites
- what happens when meteorites fall to Earth

Students will have developed their skills in:

- Investigating and experimenting
- Observing
- Recording and communicating
- Interpreting information

They will use these resources:

- Experiment card
- Photographs of meteorite impacts
- Photographs of different meteorites

Stages of the lesson and methods used:

- A general discussion should take place on what a meteorite is and the different forms that these take.
- Students should be asked if there are any meteorites found locally and how these might be identified. Examples should be shown of the different types.
- Students should be asked to carry out the meteorite impact activity.
- A general discussion should take place on how and why meteorite impact craters form, and the different results that are obtained by varying sizes of 'meteorites' and the distances that they are dropped from.
- Students should then be given the chance to observe real meteorite impact craters from the photos shown.
- A follow up activity could be used by carrying out a scientific recording of the size of impact craters given the size of each meteorite and also the height that they are dropped from. These could be plotted on scatter graphs (one each

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for height vs. size of impact crater, and for size of meteorite vs. size of impact crater). Are there any patterns? What other variables could there be?

Background Information

What are meteorites?

A meteorite is a natural object originating in outer space that survives the impact with the Earth's surface. When they enter the Earth's atmosphere, impact pressure causes the body to heat up and give off light and is known as a fireball, or a shooting star.

Meteorites can be very small or very big but they all originate in the same way. They are divided into three categories; stony meteorites (rocks composed of silicate minerals), iron meteorites (composed of metallic iron-nickel) and stony-iron meteorite (containing amounts of both).

Cuilcagh Lakelands UNESCO Global Geopark

Meteorites commonly bombard our landscape and are most commonly only miniscule fragments. However, in February 2010 a 'fireball' was seen in the skies of south Fermanagh and Cavan and is believed to have been a meteorite which fell to the ground somewhere nearby. It is more than likely that the meteorite is only the size of a human fist and to this date has never been located.

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Experiment - Meteorite Impact

Aim: To look at the meteorites and their impact on the Earth's surface

What you'll need

A meteorite sample (available to purchase online), otherwise a selection of small rocks or pebbles

A washing up basin

2 bags of flour

A fork

A small tub of cocoa powder

A small sieve

Instructions

1. Demonstrate what a meteorite feels like by passing it round (if using).
2. Explain how fragments of meteorite exist everywhere around us and can be collected easily using a magnet after laying a white sheet on the ground on a clear night.
3. Fill a basin with flour to a depth of 5cm. Use a fork to smooth the top of the flour. Then using the sieve sprinkle some cocoa powder on top. You just need a light dusting so you can see where the flour is thrown.
4. Pick an object to be your meteorite and drop from a height into the centre of the pan.
5. Experiment with different objects to see whether they make different features in the crater.
6. To repeat the experiment, smooth the surface and sprinkle another layer of cocoa powder.
7. Try throwing an object from the side to see if it forms a different pattern.
8. Compare with photos from real craters.

What's happening?

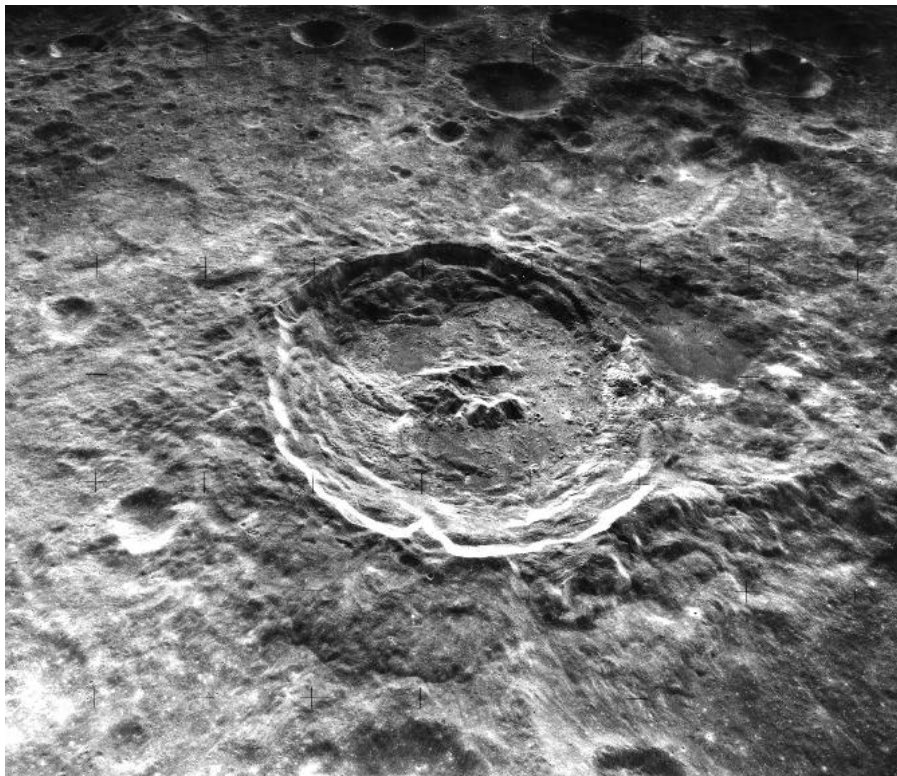
The feature produced is known as an impact crater and is a term given to any depression (natural or man-made) resulting from the high speed impact of an object with a larger body. Impact craters typically have raised rims and floors that are lower than the surrounding terrain which is demonstrated by using the varying colours of powder. Commonly material from the impact site is ejected and known as ejecta.

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Resources – Meteorite Impact



Banger crater (or Meteor crater), Arizona, USA



King crater, the surface of the moon

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Iron meteorite from Campo del Cielo in Argentina



Stony meteorite from Algeria



Iron-stony meteorite from the Atacama Desert, Chile

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