

Example 1 Footprints on the Moon

This lesson is based on a resource 'Space Science News: Special Edition' developed by the Newspapers in Science Education group with support and funding from the Particle Physics and Astronomy Research Council (PPARC) and the Belfast Telegraph.

These activities are based on an archive article taken from the Belfast Telegraph of **Monday, 21 July 1969**. Though this copy was obtained through the good offices of the paper concerned, facsimile newspapers associated with notable events can be bought from a number of sources.

The activities require pupils to apply their developing knowledge of the science relating to a 'the earth and beyond' in Sc 4 (National Curriculum) or to 'the earth in space' in AT4 (Northern Ireland Curriculum).

The original article was very long. To make it suitable for Key Stage 3 pupils (twelve-year-olds), it was abridged, **but not otherwise edited**. The headline was copied and the text rewritten in a desktop publishing application to simulate the columns of the newspaper.

The lesson is designed for use toward the end of the topic.

Anticipated Learning Gains

The intention is that, through this lesson, pupils' awareness that science-related stories occur in newspapers should be reinforced. They should also become increasingly confident in applying their science knowledge, in this case of Sc4 or AT4, to help them to understand science-based stories in the media.

Introduction

Show a video clip of the Apollo 11 landing.

Discuss with the pupils that, though we may now take this event rather for granted, it was a magnificent technological achievement.

How must people have felt at the time - the astronauts, their families, NASA personnel and those, all over the world, who followed the moon landing?

One way that we can find out more is by reading the newspapers of the day.

We can use our science knowledge to help us to understand the newspaper articles about the moon landing.

Development

Activity

Working either individually or in pairs, pupils read the newspaper article and answer some questions based on the text.

For the selected Belfast Telegraph article, 'Footprints on the Moon' the following questions related to the text.

Footprints on the Moon

Try to answer these questions about the first moon walk. The newspaper article 'Footprints on the Moon' will help you.

- 1 Who was the first man to walk on the moon?
- 2 What were the first words that he said when he stepped on the moon? Do you think this was appropriate? What would you have said?
- 3 Why did the astronauts need to carry life support systems with them on the moon?
- 4 Why did the astronauts' heart rate rise when they were working on the moon?
- 5 Why did the astronauts "kangaroo hop" on the moon?
- 6 What is the surface of the moon like?
- 7 The footprints of the Apollo astronauts may last for millions of years on the moon. Why is this so?
- 8 The astronauts set up a flag on the moon. What is unusual about this flag?
- 9 Why did the astronauts collect soil and rock samples to bring back to earth?
- 10 Why was much less fuel needed to lift off from the moon than to lift off from the earth? See if you can give at least two reasons.

Discuss the answers with the pupils, emphasising how useful the children's science knowledge is in helping them to understand the newspaper article.

Suggestions for further Activities

Working in small groups the pupils can tackle one or more of the following related activities.

- You have read that the ‘footprints on the moon’ may last for millions of years. How long do you think a ‘footprint in the school grounds’ would last? Check it out!
- Imagine you are a news reporter at the press conference when the Apollo crew returns to earth. List 4 questions you would like to ask the astronauts. Imagine you are a news reporter **today**. List 4 questions you would like to ask the astronauts **now**.
- Interview some people who remember the first moon walk. In your group, decide what questions you will ask. After your interviews, report back to the group.
- July 21, 1999 will be the 35th anniversary of the moonwalk. Imagine your group work for a local planetarium. Plan how you will celebrate this event. Your ideas must be really good to attract as many people as possible.

Footprints on the Moon

Earth watches leaping lunarnauts unlock secrets of another world

Apollo 11 astronauts Neil Armstrong and Edwin Aldrin clambered safely back into their moonship early today after leaving man's first footprints on the surface of the Moon.

They sealed themselves into the upper stage of the spidery lunar module after a television spectacular which clearly showed the two spacemen loping light-footed across the clinging, powdery surface of the Moon.

The tiny lightweight television transmitter beamed back pictures flawlessly and with extreme clarity for the whole duration of the almost unbelievable show from the Earth's airless satellite.

It is estimated about 600 million people, or one-fifth of the world population, watched live television pictures of man's first steps on the Moon.

First Words

The astronauts opened the hatch of their spacecraft six hours and 21 minutes after their landing craft Eagle made a perfect touchdown on the Sea of Tranquility.

Seventeen minutes later Armstrong became the first man to set foot on the Moon – the climax of a giant Apollo moon landing operation that began 12 years ago.

A television camera positioned at the bottom of the spacecraft's ladder recorded the scene as Armstrong's ghostly figure emerged from the spacecraft and was guided down by his companion inside.

Armstrong's first words as he gingerly placed his feet across the Moon's surface were "That's one small step for man, one giant leap for mankind"

Armstrong was joined on the moon's surface by Aldrin 20 minutes later.

The two Americans walked slowly and warily at first aware that one false move could bring instant death on the airless grey lunar desert. But as their confidence mounted, Armstrong (38) and Aldrin (39) – the only living souls in mankind's new one territory – jumped, bounced and kangaroo-hopped gaily in front of their landing craft, taking advantage of reduced gravity.

Before millions of people on Earth, Armstrong and Aldrin leaping exuberantly across the dusty, rocky surface of the Moon, unlocked the secrets of another world.

Flag

The two men performed all but one – and that minor – of the tasks assigned to them for their lunar walk, which included collecting soil and rock samples, placing a special laser beam reflector, planting the flag and unveiling a plaque.

The plaque said simply “Here men from the planet Earth first set foot upon the Moon, July 1969 AD. We came in peace for all mankind”.

With no breeze to keep it flying, the flag had a stiffener along its top edge to keep it unfurled. Then, as the astronauts scoured the Moon’s surface, the secrets came tumbling out. Armstrong reported “the surface is fine and powdery, it adheres like powdered charcoal to my boot ... I go in only an eighth of an inch”

And the two men certainly left their mark clearly – footprints about a half an inch to an inch deep in the slippery, powdery topsoil which they reported clung to their boots.

The television cameras panned across the pimply rock strewn cratered surface. Armstrong said it reminded him of some desert territory in the United States but it has a beauty of its own ... it’s very pretty up here”

Nixon talks to Spacemen

They interrupted the operation only once to receive the telephone call from President Nixon, which he said ‘Certainly has to be the most historic telephone call ever made’.

Neil Armstrong said “It is a great honour and privilege for us to be here representing not only the United States but men of peaceable nations with an interest and a curiosity and vision for the future’.

Life support

The Apollo flight surgeon Dr Charles Berry, reported that the heart rates of the two men ranged from a low of 90 beats a minute to highs of 125 for Aldrin and 160 for Armstrong during peak periods.

Armstrong’s high came as he was loading boxes full of rock samples – about 20 pounds in all – aboard the lunar module.

The Moon’s surface easily withstood the shock of the Eagle’s landing. The four-legged machine sank only one or two inches into the dust – boding well for future Moon landings.

With life support packs strapped to their backs giving them about three hours of life on the Moon, the astronauts went about their work with the calmness of a Sunday afternoon gardener on earth. They set up on the Moon instruments that will continue to give scientists on Earth information for some time to come.

Nearly nine hours after landing, the astronauts were still busy filing containers with samples from man’s new world. Then they returned to their space vehicle to rest before beginning the hazardous journey back to Earth.

[TEXT ABRIDGED FROM THE BELFAST TELEGRAPH, JULY 1969]