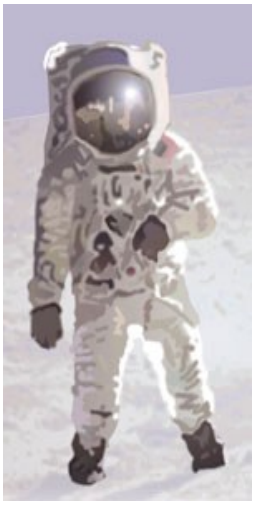
Space Exploration



Humans have dreamed of space travel since antiquity, but it was only in the second half of the 20th century that we were able to build rockets powerful enough to overcome the force of gravity and reach orbital velocities that could allow humans to explore space.

In 1942 the German V2 was the first rocket to reach 100km from the Earth's surface (the boundary of space). The rocket was designed by Wernher Von Braun, who later worked with NASA as the creator of the rockets that went to the moon. Then, in 1947, the first animals, fruit flies, were launched into space. They were chosen because they are more similar to humans than you might imagine! The first monkey in space was Albert II, who left Earth on 14th June 1949.

On 4th October 1957, Russia launched the first satellite into space, and the space age properly began! This satellite was called Sputnick I. Sputnick means 'satellite' in russian. In November 1957, the Russian space dog Laika, who travelled in Sputnik II, became the first animal to orbit (circle) the earth. By 1959 American and Russian scientists were in a race to get a spacecraft to the moon. The Russians got there first, but it was ten more years until an astronaut walked on the moon, and this time it was the Americans. This 'space race' was part of the Cold War. The first man and woman in space were both Russian, Yuri Gagarin (12th April 1961) and Valentina Tereshkova (16 June 1963).

In 1963 US President John F. Kennedy promised the world that the US would land men on the moon before 1970. Before risking people's lives, NASA sent a robot spaceship, to make sure they could land safely. Then, on 20th July 1969, Neil Armstrong and Buzz Aldrin took "one small step" and became the first men on the moon. The first words said on the moon were "the Eagle has landed".

Astronauts soon moved on to explore further. In 1973, Russian space probe Mars 2 explored the planet Mars. By the end of the decade, the Voyager spacecraft had sent back detailed images of Jupiter and Saturn, their rings, and their moons. Technological advancements were made. In the 1980s satellite communications expanded to carry television programs, and people were able to pick up the satellite signals on their home dish antennas. Until 1981, spacecrafts were designed to be used only once, but the Space Shuttle was designed to be reused for up to 100 visits to space. This made space travel less expensive.

However, we must not forget that space travel is dangerous. On January 28th 1986, tragedy struck. Space Shuttle Challenger exploded shortly after launch, because of a fuel system failure. All seven astronauts on board were killed, and no shuttles left Earth for nearly three years. This shocking accident reminded the world of the dangers of space travel, and the incredible bravery of all astronauts.

We still have a lot of the universe to explore. In 2000 the first permanent crew moved into the International Space Station (ISS), where crews of astronauts have been living ever since. This high-flying laboratory has become a symbol of cooperation in space exploration, with former competitors now working together.The station has been continuously occupied for over 14 years, since the arrival of Expedition 1 on 2 November 2000. This is the longest continuous human presence in space.

What is the future of space tourism? On the 28th April 2001 American millionaire Dennis Tito became the first space tourist when he paid around 20 million dollars for a ride in a Russian Soyuz spacecraft. Dennis spent a week in orbit, most of the time visiting the International Space Station. He had to train for 900 hours just to be a passenger! In January 2004, US President George Bush announced that NASA would resume missions to the moon by 2020, and work on a permanent moon-base would begin. The next aim is a manned mission to visit Mars.

Discussion Questions

Why did we send animals into space before humans?
Is there an ethics of space travel? Should there be?
What was the 'Cold War'?
Conflict in World War Two and the Cold War played a part in this story. Now, at the International Space Station, countries cooperate. Is international competition or cooperation good for scientific and technological advancements?
What can we learn from space exploration?
Should space exploration be a priority for humans?
How are satellites used today?
What are the risks and benefits of space exploration?
Would you like to be a space tourist? Why/ why not?
Can you predict the future of space exploration?

Tasks

Imagine you are on a mission to Mars. The mission will last one year, and you are accompanied by four other astronauts. You will travel in a space craft with a height of 56 metres and a diameter of 9 metres for two weeks, and spend the rest of the time based on a space station which has a habitable volume of 388 cubic meters. Write a list of things you will take with you, explaining why.

Now imagine you are floating in space on a huge NASA spacecraft. You are a member of an outer-space exploration crew, and have just been told by your commanders on Earth to evacuate due to an inbound comet that is on a collision course with your spaceship. You and your teammates have to make rapid decisions for your escape and survival. Write down what you will do.

Now choose a location to research from the following list.

Mercury, Venus, Mars, asteroid belt, Jupiter, Saturn, Uranus, Neptune, Pluto.

Find out some key facts about the location, and write a 200 word proposal to NASA, saying why they should launch a space mission there, and explaining what you hope to discover.