

Activity

Episode 8
25th March 2014

Deep Space

Key Learning

Students will learn about the role Australia has played in space exploration and how scientists have improved our understanding of the solar system.

The Australian Curriculum

Science/Science understanding/Earth and space sciences

The Earth is part of a system of planets orbiting around a star(the sun) ([ACSSU078](#)) *Year 5*



Science / Science as a Human Endeavour / Use and influence of science

Scientific understandings, discoveries and inventions are used to solve problems that directly affect peoples' lives ([ACSHE083](#)) *Year 5.*



Science/Science as a Human Endeavour/ Nature and development of science

Important contributions to the advancement of science have been made by people from a range of cultures

([ACSHE082](#)) *Year 5*



Discussion Questions

1. Briefly describe what the Deep Space Network is.
2. How has Australia played an important role in space exploration?
3. What did Neil Armstrong mean when he said "It's a small step for man but a giant leap for mankind"?
4. In which town is the 'Dish'?
5. Where did NASA build the three Communication Centres?
6. When was the first mission to the moon?
7. What is it the Deep Space Communication Centre helps NASA to do?
8. The Deep Space Network's powerful _____ have kept in touch with just about every mission that's gone to the moon or beyond.
9. Which anniversary is the Deep Space Network celebrating?
10. How many Dishes will the Canberra Centre have in total with the new additions? Describe the very important mission that they'll be a part of.

Activities

Hold a class discussion about the BtN *Deep Space* story and clarify questions students have about the story. Ask students what they already know about space exploration and Australia's involvement. Students name three things they know and record responses on a mind map with space exploration at the centre.

Key Missions

The Canberra Deep Space Communication Complex (CDSCC) has been involved in some key NASA missions in the past 50 years.

Students will choose a mission CDSCC has been involved in and research it in more detail.

Apollo 11 Moon Landing



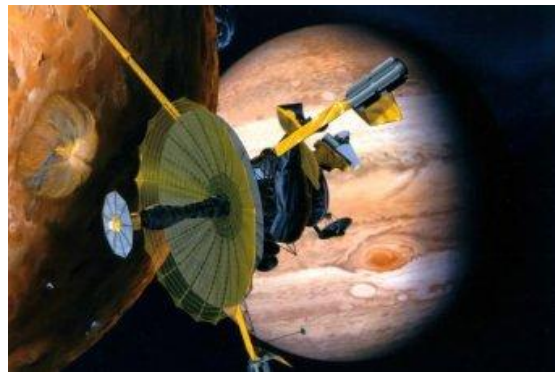
Curiosity on Mars



Voyager 1 Fly-Bys



Phoenix on Mars



Research questions

- When did the mission take place?
- What was the purpose of the mission?
- Briefly summarise the mission.
- What were some challenges of the mission?
- How did Australia contribute to the mission?

The Solar System

Students begin by recording what they know about the solar system. Working in pairs, students will research one of the planets in the solar system. Use the following to help guide students' research.

Planet Research

- Name the 8 planets in our solar system
- Conduct in depth research into one of the planets in the solar system.
- Include a description of what the planet looks like.
- Find out some interesting facts.
- Geographical features – Is it gaseous or rocky? Does it have an atmosphere? What are conditions on the surface like?
- Distances – how far is this planet from the sun?
- Movement – identify the path of this planet. How fast does it travel around the sun?
- Present research using Prezi <http://prezi.com/> or other publishing software. Include images in the presentation.



Space Exploration

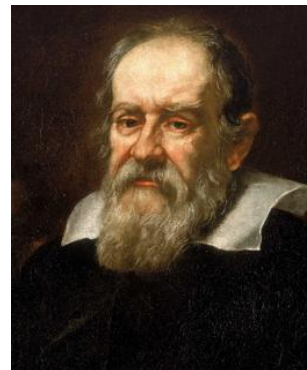
Using the information recorded on the mind map at the beginning of the activity and students' own research investigate the following questions about space exploration:

- Why explore space?
- What are some of the benefits of space exploration?
- Are there any disadvantages? What are they?
- How has space exploration changed since the 1960s?
- What is the future of space exploration?

The work of Galileo

Students research Galileo's story and evidence to support the theory that the Earth orbits the sun.

- Who was Galileo?
- What do you know about the work of Galileo?
- How long does it take for Earth to orbit the sun?
- How long does it take for Earth to rotate on its axis?
- How has Galileo helped us to understand the solar system?



Evaluate

Students will reflect on their learning

- I learned that...
- I enjoyed/did not enjoy...
- I want to know more about...
- I was surprised to discover that...

Further Investigation

Create a diagram that shows why radio telescopes are needed at three locations on the Earth's surface to track spacecrafts. The following websites will help with students' research

<http://deepspace.jpl.nasa.gov/education/drdish/#>

<http://www.abc.net.au/catalyst/stories/2358763.htm>

Related Research Links

ABC News – Key NASA missions involving the Canberra Deep Space Communication Complex

<http://www.abc.net.au/news/2014-03-19/key-nasa-space-missions/5330260?section=act>

ABC Catalyst – Space Communications

<http://www.abc.net.au/catalyst/stories/2358763.htm>

NASA Deep Space Network

<http://www.cdsc.nasa.gov/Pages/kids.html>

Time for Kids – Touchdown!

<http://www.timeforkids.com/news/touchdown/43251>

Kids Astronomy – Our Solar System

http://www.kidsastronomy.com/solar_system.htm

Science Kids - Galileo

<http://www.sciencekids.co.nz/sciencefacts/scientists/galileogalilei.html>