

Teacher Resource

Moon Landing Special

Focus Questions

Space Race

1. Discuss the BTN *Space Race* story as a class and record the main points of the discussion.
2. What was the name of the war between the United States and the Soviet Union in which they never directly fought each other?
3. What was the name of Earth's first artificial satellite?
4. Which country was the first to launch an artificial satellite into Earth's orbit?
5. Why was NASA created?
6. How did the US and Soviet Union test technology before sending humans into space?
7. Who was the first human to be launched into space?
 - a. Yuri Gagarin
 - b. Alan Shepard
 - c. Neil Armstrong
8. What challenges did the US and Soviet Union face in their race to get to the Moon?
9. What did the crew of Apollo 8 do during their orbit of the Moon?
10. What questions do you have after watching the BTN story?

Apollo 11

1. Briefly summarise the BTN *Apollo 11* story.
2. How many astronauts were on Apollo 11?
3. How far is the Moon from Earth?
4. What was the name of the rocket that Apollo 11 took off from?
5. What was the name of the Apollo 11 Command Module?
 - a. Snowcone
 - b. Columbia
 - c. Eagle
6. What words would you use to describe the landing of the Eagle on the Moon?
7. Complete the following sentence. "It's one small step for man, one giant leap for _____".
8. What did Neil Armstrong and Buzz Aldrin collect while on the Moon?
9. Why did the crew have to be quarantined for 3 weeks once they returned to Earth?
10. Illustrate an aspect of the Apollo 11 story.

Apollo 11 and Parkes

1. Retell the BTN *Apollo 11 and Parkes* story using your own words.
2. What date did Aussies get to watch the Moon landing on TV?

Key Learning

Students will investigate the relative sizes and movement of Earth, the Moon and the Sun. Students will explore Australia's contribution in the Moon landing. Students will investigate what it would be like to live on the Moon and what would be needed to sustain human life.

Curriculum

Science – Year 3

Earth's rotation on its axis causes regular changes, including night and day.

Science – Years 5 & 6

Scientific knowledge is used to solve problems and inform personal and community decisions.

Science – Year 7

Predictable phenomena on Earth, including seasons and eclipses, are caused by the relative positions of the sun, Earth and the moon.

Scientific knowledge has changed peoples' understanding of the world and is refined as new evidence becomes available.

3. Where are the 3 Australian stations that played a role in the Apollo 11 mission? Find using Google Maps.
4. What did scientists at Honeysuckle and Tidbinbilla stations do during the mission?
 - a. Monitor the ship's status
 - b. Monitor the astronauts' heart rate
 - c. Monitor data inside the astronauts' suits
 - d. All of the above
5. What station relayed to the world the first images of Neil Armstrong setting foot on the Moon?
6. How big is the Parkes radio telescope dish?
7. What happened to the Parkes radio telescope just before it broadcast the Moon landing?
8. What is the name of the film that tells the story of the Parkes Observatory's role in the Moon landing?
9. NASA stayed on the vision from Parkes for the rest of the 2 and a half-hour broadcast. True or false?
10. What did you learn watching the BTN story?

Space Future

1. What did the BTN *Space Future* story explain?
2. Explain what the students in the *Space Future* story are doing.
3. What do the kids in the story hope to do in the future?
4. When do experts think humans will make it to Mars?
 - a. 5 years
 - b. 25 years
 - c. 50 years
5. What year does NASA hope to return astronauts to the surface of the Moon?
6. Complete the following sentence. NASA is building a spacecraft that will orbit around the _____.
7. Give an example of what space programs around the world have achieved recently.
8. Australia has its own space agency. True or false?
9. Illustrate an aspect of the *Space Future* story.
10. What did you like about the BTN story?

Activity

Class discussion

Before watching the BTN *Moon Landing Special* students will brainstorm a list of questions they have about the Moon. For example:

- How big is the Moon compared to Earth?
- How far is the Moon from the Sun and Earth?
- How long does it take for the Moon to orbit Earth?
- Why does the Moon appear to change shape each night?
- What is a lunar eclipse?
- Why can I sometimes see the Moon during the day?



Activity

What do you see, think and wonder?

After watching the BTN *Moon Landing Special* ask students to respond to the following:

- What did you SEE in this video?
- What do you THINK about what you saw in this video?
- What did you LEARN from this video?
- What was SURPRISING about this video?

Hold a class discussion about the information raised in the BTN special. Which of your students' questions (from the class discussion) were answered? What questions weren't answered that your students want to explore in more detail? Students will use the KWLH organiser below to help organise the questions raised in your class discussion and find out the gaps in their knowledge.

Activity

KWLH

The KWLH organiser provides students with a framework to explore their knowledge on the topic of Apollo 11 and space exploration and consider what they would like to know and learn.

<i>What do I <u>k</u>now?</i>	<i>What do I <u>w</u>ant to know?</i>	<i>What have I <u>l</u>earnt?</i>	<i><u>H</u>ow will I find out?</i>

Research questions for inquiry

Students will determine a focus for their inquiry and develop a key question to guide their inquiry (below are some examples). Students will collect and record information from a wide variety of sources (internet, books, newspaper and magazines).

- Research and prepare a profile on Earth's Moon. Include the following information: distance from Earth, how long it takes to orbit Earth, the minimum/maximum temperatures of the Moon and geographical features of the Moon. Include any other interesting facts you find.
- What are the relationships between Earth, the Moon and the Sun? Draw a diagram showing the relative sizes and movement of Earth, the Moon and the Sun. In your description include words like orbit, revolution and axis.
- How does gravity affect the Moon? Investigate Earth's gravitational pull on the Moon and explain why we only ever see one side of the Moon.
- How can we see the Moon? Explain why we can sometimes see the Moon during the day.
- Why does the Moon appear to change shape each night? Explore the phases of the Moon using illustrations to help explain the different phases. Consider observing the Moon at night over a month. Record the date and time of your observations, draw what you see and describe the Moon's shape and appearance.
- How will space exploration change in the future? Make a prediction about how space exploration will change in the future. Illustrate your prediction/s and provide an explanation.

Activity

Timeline – History of space exploration

Students will investigate the history of space exploration and present the information they find on a timeline. Below are some key events in the history of space exploration:

- 1957 – Sputnik, first artificial satellite launched into space
- 1961 – Yuri Gagarin, first person to enter space
- 1969 – Apollo 11, Moon landing
- 1990 – Launch of Hubble Space Telescope
- 1998 – Launch of International Space Station
- 2011 – Curiosity launches to Mars
- 2019 – First image of black hole released



Students will present their information on a timeline and respond to one or more of the following research questions:

- Find 1-3 interesting facts about each significant event on your timeline. Why are they significant?
- How has technology used in space exploration changed over time?
- Imagine if you were the first person to land on the Moon. Write a journal describing your experience including the challenges you face on the mission.
- How have advancements in space technology helped us on Earth? Research an invention which has come from the Apollo 11 mission, for example microchips, insulation, cordless tools, satellite television and water filters. Research why the technology was needed for the Apollo 11 mission and how the invention helps us in our day-to-day living on Earth now.
- Which dates on the timeline do you think are especially significant? Why?
- Look back on major events of 1969, the year of the Moon landing, to learn more about what was happening during that time. Choose one significant event from 1969 and create your own BTN style news story. Use the internet or search for newspaper articles in a library to help with your research.

Activity

Research project – Apollo 11

Students will explore the Apollo 11 space mission in detail and use the following questions to guide their research.

- Briefly summarise the mission.
- When did the mission take place?
- What was the purpose of the mission?
- Who was the crew? What were their roles?
- What did the mission discover?
- Which countries were involved in the mission?
- How has the mission helped us understand the Solar System and beyond?
- What were some challenges of the mission?
- Include photographs and diagrams in your research project.

Further investigation

Students will choose one of the following to investigate further:

- Imagine you are a reporter on Behind the News in 1969. Write a news article reporting on the Apollo 11 mission.
- Imagine you are one of the astronauts on the Apollo 11 mission. Write a journal entry in your diary about your experiences before, during or after the mission.
- How has space exploration changed since the first landing on the Moon. Make comparisons between now and then. Make predictions about future space missions and exploration. Include illustrations with your prediction.

Activity

Interview – Memories of the Moon landing

Students will interview someone who remembers the Moon landing and ask them to share their memories about the event. Students will prepare a list of questions, conduct the interview and then share their interview findings with the class. Below are some example questions.

- How old were you when man first landed on the Moon?
- Do you remember where you were?
- Did you watch it on TV or listen to it live on the radio?
- What are your strongest memories of the event?
- How did the event make you feel?
- Why do you think it was such a significant event?

Alternatively, students will imagine they are a reporter from 1969 and they have been given the opportunity to interview an astronaut from the Apollo 11 space mission. Students will need to think about the questions they would like to ask the astronaut. Students will write a list of questions and then try to find answers to their questions. Below are some example questions.

- How were you chosen to be a part of the Apollo 11 mission?
- How did you prepare for the mission?
- How long was the mission? What happened on each day?
- What were some of the challenges you faced during the mission?
- Describe your feelings before, during and after the mission.

Activity

Research – Australia's involvement in Apollo 11

Students can choose one or more of the following research questions or come up with their own:

- How did Australia help show the world the Moon landing?
- Why was the Parkes telescope used to receive and send transmissions from the Moon to NASA?
- How has the film 'The Dish' helped Australians learn about Parkes and its role in the Moon landing?

Create a Kahoot Quiz

Use [Kahoot!](https://kahoot.it/) to test students' knowledge about Parkes and its role in the Moon landing. Quizzes can be created to recap learning or test personal knowledge. There is also the option to connect with classrooms around the world and play kahoot in real time.

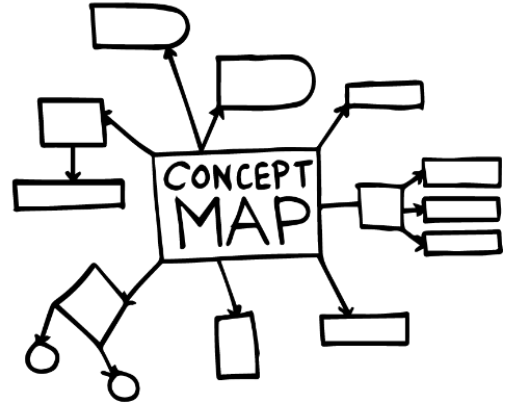


Activity

Class discussion – Space future

Hold a class discussion about the information raised in the *Space Future* story. Create a class mind map about space exploration asking students to record what they know. Use the following questions to guide discussion:

- Why should we explore space?
- Is space exploration important? Why or why not?
- Is it important for Australia to be involved in space exploration? Why or why not?
- 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?
- Name an Australian astronaut that has gone into space. Create a profile.



Further Investigation – Living on the Moon

Students will investigate what it would be like to live on the Moon and what would be needed to sustain human life. Watch [The Living on the Moon video](#) and the [BTN Moon Living video](#) to find out more.



Begin with a class brainstorm using the following questions to guide discussion:

- What are the three basic things we need to survive?
- What do you think it would be like to live on the Moon?
- What are the challenges?
- What are the benefits of having a space settlement on the Moon?
- When planning for life on the Moon what are some important things to think about?

Students will then need to research conditions on the Moon, so they can plan and design a settlement on the Moon that will sustain human life.

- What are the conditions like on the Moon?
- What needs to be considered when planning a colony on the Moon? For example:
 - Water supply
 - Atmosphere (air supply)
 - Temperature
 - Food Production
 - Waste Management
 - Gravity
- What materials could be used to build a space settlement?

Students can create either a model or a labelled diagram of their 'Moon settlement'. Display students' work in a public space in the school.

Activity

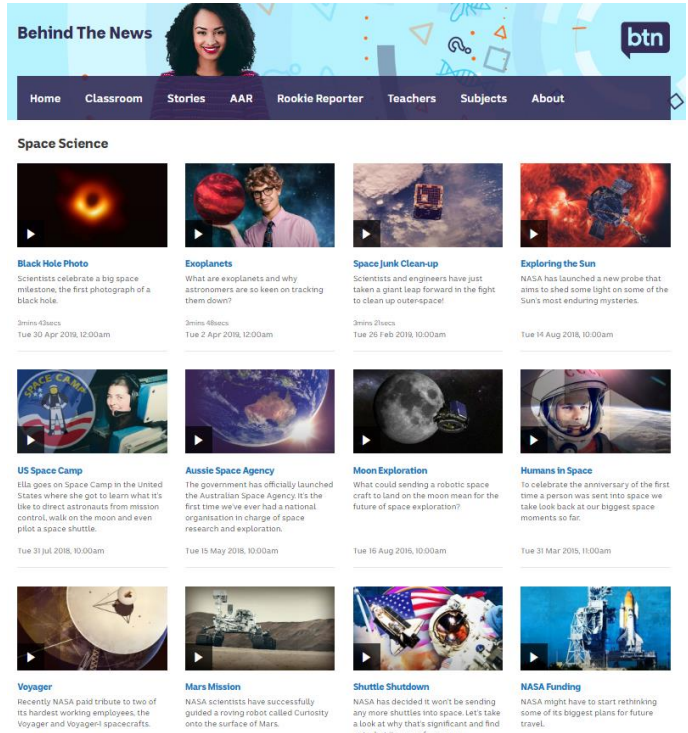
BTN Space Science stories

Visit BTN's collection of stories which focus on space science and space exploration.

After watching any one of the BTN videos ask students to respond to the discussion questions (to find the discussion questions and teacher resources go to the related BTN Classroom Episode and download the Episode Package).

Link to collection of BTN Space Science stories

<https://www.abc.net.au/btn/space-science/10614248>



Behind The News

Home Classroom Stories AAR Rookie Reporter Teachers Subjects About

Space Science

- Black Hole Photo**
Scientists celebrate a big space milestone, the first photograph of a black hole.
3mins 43secs
Tue 30 Apr 2019, 12:00am
- Exoplanets**
What are exoplanets and why astronomers are so keen on tracking them down?
3mins 48secs
Tue 2 Apr 2019, 12:00am
- Space Junk Clean-up**
Scientists and engineers have just taken a giant leap forward in the fight to clean up outer-space!
3mins 21secs
Tue 26 Feb 2019, 10:00am
- Exploring the Sun**
NASA has launched a new probe that aims to shed some light on some of the Sun's most enduring mysteries.
Tue 14 Aug 2018, 10:00am
- US Space Camp**
Ella goes on Space Camp in the United States where she got to learn what it's like to direct astronauts from mission control, walk on the moon and even pilot a space shuttle.
Tue 31 Jul 2018, 10:00am
- Aussie Space Agency**
The government has officially launched the Australian Space Agency, it's the first time we've ever had a national organisation in charge of space research and exploration.
Tue 15 May 2018, 10:00am
- Moon Exploration**
What could sending a robotic space craft to land on the moon mean for the future of space exploration?
Tue 16 Aug 2016, 10:00am
- Humans in Space**
To celebrate the anniversary of the first time a person was sent into space we take look back at our biggest space moments so far.
Tue 31 Mar 2015, 11:00am
- Voyager**
Recently NASA paid tribute to two of its hardest working employees, the Voyager and Voyager2 spacecrafts.
Tue 31 Jul 2018, 10:00am
- Mars Mission**
NASA scientists have successfully guided a roving robot called Curiosity onto the surface of Mars.
Tue 31 Jul 2018, 10:00am
- Shuttle Shutdown**
NASA has decided it won't be sending any more shuttles into space. Let's take a look at why that's significant and find out what it means for space.
Tue 31 Jul 2018, 10:00am
- NASA Funding**
NASA might have to start rethinking some of its biggest plans for future travel.
Tue 31 Jul 2018, 10:00am

Useful Websites

BTN – Moon Exploration

<http://www.abc.net.au/btn/story/s4517911.htm>

ABC – The Moon and Beyond

<https://www.abc.net.au/news/science/>

BTN – Humans in Space

<https://www.abc.net.au/btn/classroom/humans-in-space/10526760>

National Geographic Kids – 10 facts about the Moon

<https://www.natgeokids.com/au/discover/science/space/facts-about-the-moon/>

ABC News – Pocket Guide to the Moon

<https://www.abc.net.au/news/2019-07-16/pocket-guide-to-the-moon/11260558>

NASA – Earth's Moon

<https://solarsystem.nasa.gov/moons/earths-moon/overview/>

NASA – Apollo 11

https://www.nasa.gov/mission_pages/apollo/apollo-11.html