Teacher Resource

Simulated Space Mission

Focus Questions

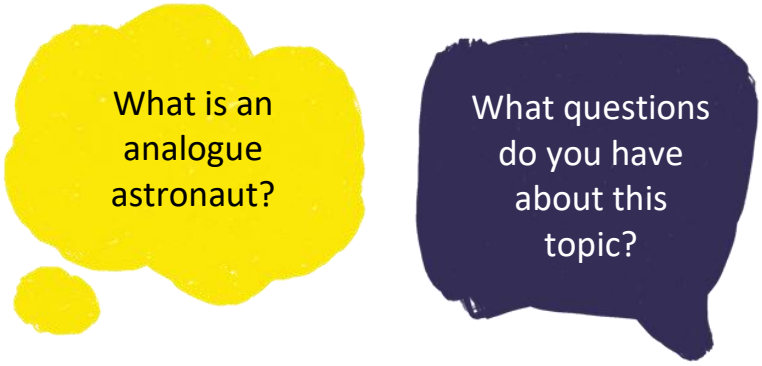
Discuss the BTN story as a class and record the main points of the discussion. Students will then respond to the following:

1. Summarise the BTN Simulated Space Missions story in three sentences.
2. Describe the analogue habitat which featured in the BTN story.
3. What is the purpose of analogue habitats?
4. Why are simulated space missions important?
5. What kinds of science experiments do people do during pretend space missions on Earth? Give one example.

Activity: Class Discussion

After watching the BTN Simulated Space Mission story, hold a class discussion using the following discussion starters.

- What is an analogue astronaut?
- Why do we have analogue astronauts?
- What are the key reasons for doing analogue missions? (to test technology, procedures, and human performance and psychology, training).
- Why are analogue missions important?
- What questions do you have about this topic?



EPISODE 31
4 November 2025

KEY LEARNING
Students will explore the purpose and importance of analogue space missions. Students will explore the features of an analogue space habitat and design and create a diorama of an analogue habitat.

CURRICULUM
Science – Year 5
The Earth is part of a system of planets orbiting around a star (the sun).

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

Science – Years 5 & 6
With guidance, pose clarifying questions and make predictions about scientific investigations.

Science involves testing predictions by gathering data and using evidence to develop explanations of events and phenomena and reflects historical and cultural contributions.

Science – Year 7
Scientific knowledge has changed peoples' understanding of the world and is refined as new evidence becomes available.

Activity: Glossary

Students will brainstorm a list of key words that relate to the BTN Simulated Space Mission story. Here are some words to get them started.

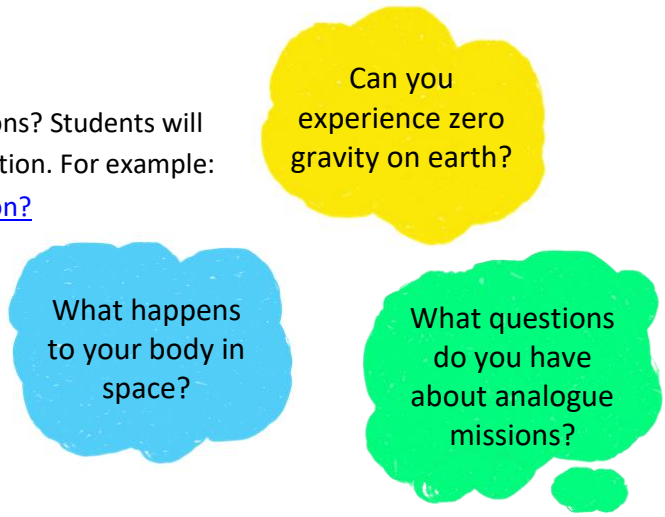
ANALOGUE HABITAT	SPACE SIMULATION	ANALOGUE ASTRONAUT
EXPERIMENT	MOON HABITAT	ANALOGUE MISSION

Activity: Questions and Answers

Are your students curious about analogue space missions? Students will make a list of questions they have about space exploration. For example:

- Why do astronauts need to prepare for isolation?
- Can you experience weightlessness on earth?
- What happens to the brain in zero gravity?

Students will use the internet to find answers to their questions.



Activity: KWLH Research

The KWLH organiser provides students with a framework to explore their knowledge on a topic and consider what they would like to know and learn.

What do I **know**?	What do I **want** to know?	What have I **learnt**?	**How** will I find out?

Research Inquiry questions

Students will collect and record information from a wide variety of sources. Students may develop their own question for inquiry or select one of the questions below.

- What is an analogue space mission? Why are they conducted on Earth?
- What type of environments on Earth are used to simulate conditions in space or on other planets?
- How do analogue missions help astronauts prepare for living on the Moon or Mars?
- What challenges do astronauts face during analogue missions?
- What are some real-world examples of analogue missions? Write a summary for one analogue mission, which answers the 5 W's – Who, What, Where, When and Why?

Activity: Explore an Analogue Habitat

Analogues have been used since the 1960s to simulate different aspects of space missions here on Earth. The missions have been integral to space exploration planning, research, hardware development, and astronaut training. In this activity student will explore the role and importance of analogue space missions and then act as engineers by making their own analogue habitat.

Class Exploration

As a class explore real-world locations on Earth that are used to simulate space environments. Identify some examples of analogue environments.

- Deserts (to simulate mars)
- Volcanic areas (that have terrain similar to the Moon)
- Underwater habitat (to practise spacewalk and isolation training)
- Polar stations (extreme cold, isolation and limited sunlight)

In small groups students will research one analogue mission or environment making as many notes as they can about its features. Record key information about the environment or mission including:

- Location
- Purpose
- Habitat design
- Challenges (temperature, oxygen, water, food, isolation)

Research

Before creating their dioramas, students will investigate the role and importance of analogue astronaut missions.

- What is an analogue space mission?
- Why do astronauts and scientists use Earth environments to practise space exploration?
- Why are analogue space missions important?
- When was the first analogue space mission? Who ran the mission? Describe the mission.
- When was Australia's first analogue astronaut mission?

Build an analogue space habitat

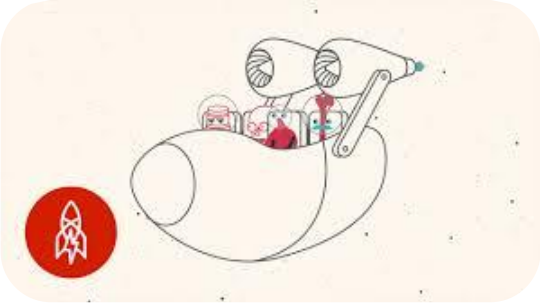
Students will design and build a diorama of an analogue space habitat to help scientists prepare for a space mission. It may be to prepare for living on Mars, the Moon or other planets. As part of their planning students will complete the following:

- Type of environment (desert, volcanic, underwater, or polar)
- What is the purpose of the missions?
- What materials will you need to build your diorama?
- What special features will you include in your diorama (for example, living quarters, a research labs, solar panels, communication systems, vehicles and water and oxygen supply)

To further extend your students, they can:

- Create a version of their habitat using Minecraft or with Lego
- Write a diary entry from an astronaut living in the analogue habitat

Activity: Launch with TEDEd



What does outer space do to your body?
Watch this TEDEd video to learn more!

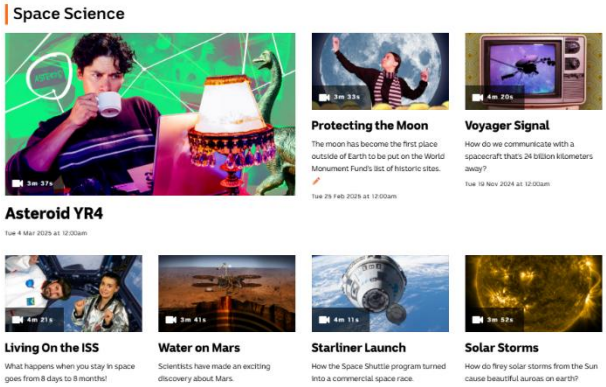
Are you more likely to explode or freeze in space?
Watch this TEDEd video to learn more!

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



Useful Websites

- Australia's first analogue space mission takes off – Australian Space Agency
- Why Do We Use Analogs? – NASA
- The Human Body in Space – NASA
- What outer space does to your body – TEDEd
- Simulated Space Missions – BTN High
- Analog Missions – NASA
- Design your own Mission to the Moon! (teacher's guide) – Australian Space Agency
- What Hazards do Analog Missions Test? – NASA