Teacher Resource

Water on Mars

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. Discuss the Water on Mars story in pairs or small groups. What were the main points of the discussion?
2. Where on Mars do scientists think the liquid water is?
3. How did scientists discover the water on Mars?
4. Why is the discovery significant?
5. What do Mars and Earth have in common? Use a Venn diagram to show similarities and differences.

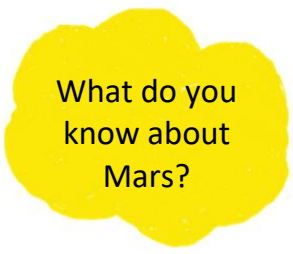
Activity: Class Discussion

After watching the BTN Water on Mars story, hold a class discussion responding to the following questions:

- What do you know about Mars?
- What does Mars look like?
- How similar are Earth and Mars?
- Describe the location of Mars in relation to the Earth and the sun.
- Why do you think scientists want to explore Mars?
- What might be some challenges of exploring Mars?
- Think of 3 unanswered questions you have about Mars.

Activity: Q&A

Are you curious about Mars? Students will make a list of questions they have about the BTN story and space exploration. Students will use the internet to find answers to their questions and share their findings with the class.



EPISODE 24
27th August 2024

KEY LEARNING
Students will explore the characteristics of the planet Mars.

CURRICULUM
Science – Year 5
Scientific understandings, discoveries and inventions are used to solve problems that directly affect peoples' lives.

The Earth is part of a system of planets orbiting around a star (the sun).

Science – Years 5 & 6
Scientific knowledge is used to solve problems and inform personal and community decisions.

Science – Year 6
The growth and survival of living things are affected by the physical conditions of their environment.

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.

Activity: Glossary

Students will brainstorm a list of key words that relate to the BTN Water on Mars story. Here are some words to get them started.

MARS	PLANET	SOLAR SYSTEM
SOLAR SYSTEM	RESOURCES	EXPLORATION

Ask students to write what they think is the meaning of each word (including unfamiliar words). They will swap definitions with a partner and ask them to add to or change the definition. Check these against the dictionary definition.

Further activities for students:

- Where did Mars get its name? Explore its meaning. Why are most of the planets in the solar system named after Roman gods? Learn more by watching this video How Do Planets Get Their Names? We Asked a NASA Expert (Source: NASA).
- What is the difference between an icy giant, a gas giant and a terrestrial planet? Include an illustration or diagram with your explanation.
- Use as many of the following words to write a summary about Mars: Martian, Red Planet, terrestrial, space exploration, solar system, Phobos, Deimos, Perseverance rover and iron oxide.
- Who explores planets? Learn more about the jobs involved with space exploration. Choose one job and investigate what the job involves and what you need to study to become one. Explore job roles at the Australian Space Agency.

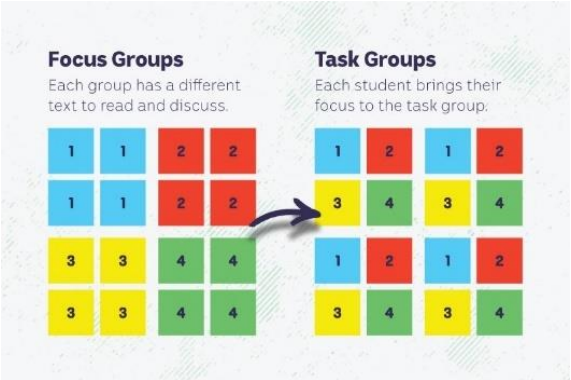
Activity: Jigsaw Learning

In this jigsaw learning activity students will work cooperatively to learn more about the 8 planets in our solar system. Each group will become experts on one of the planets and then share what they have learnt with other students.

Visit NASA's website to learn all about the 8 planets in the solar system: Mercury, Venus, Earth, Mars, Jupiter, Saturn, Uranus, and Neptune.

Form groups

Divide the class into 8 x Focus Groups. Each Focus Group will be assigned a different planet and become experts. Each group will need to decide how they will collect and communicate the information they find during their research.



Research

Each Focus Group will work as a team to learn as much as they can about their topic. They will use the following as a guide for their research.

- What is the name of the planet? Investigate the origins of the planet's name.
- When was the planet discovered?
- How big is the planet?
- Where is the planet in the solar system in relation to Earth and the Sun? Draw a diagram.
- How far away is the planet from the Sun?
- What does it look like? Describe the surface of the planet and find pictures that illustrate these features. Use words from your class glossary when describing the planet.
- What important scientific discoveries have been made about the planet? List any missions.
- Optional: Write 1-3 scientific questions to research and answer.
- Include diagrams.
- Include a glossary of key words.
- Interesting facts!

Share

Mix the Focus Groups to form Task Groups (Tasks Groups include one student from each of the Focus Groups) to share the information they have collected. Students will share the information they have collected and learn from one another.

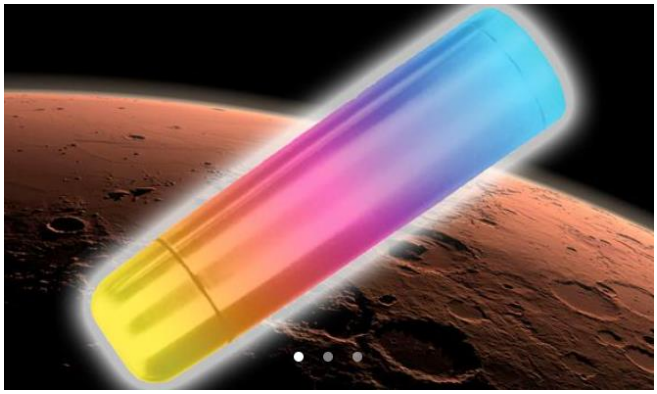
Reflect

Students will reflect on the activity by responding to one or more of the following questions:

- What did you enjoy about this investigation?
- What did you find surprising?

Activity: Scientific Investigation

In this NASA classroom activity: Mars Thermos student teams use the engineering design process and everyday materials to design an insulator that will keep a small amount of water from rapidly changing temperature. The goal of this activity is to keep cold water cold and warm water warm.



Mars Thermos Classroom Activity (Source: NASA)

Begin this activity by watching this NASA video as a class Mars in a Minute: Is Mars Red Hot?

Link to NASA Classroom Activity
Mars Thermos

Activity: Graphic Organisers

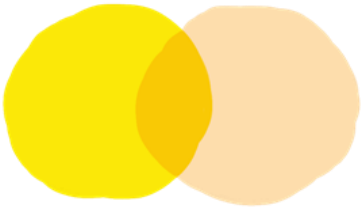
Graphic organisers are a helpful learning tool for students to organise, clarify, or simplify complex information. Students will choose one type of graphic organiser to help them explore, understand and analyse our solar system and the importance of space exploration.

Venn Diagram

Purpose: To compare the similarities and differences between two or more things.

Procedure: Write the items being compared in the circles. Where the circles overlap, record similarities. Record the characteristics which are different in the areas that do not overlap.

Activity: Compare the similarities and differences between Earth and Mars.



Mind Map

Purpose: To assist in activities that involve planning, brainstorming, making notes, organising or problem solving.

Procedure: An issue or topic is written in the centre. Related ideas are linked to the central issue and other ideas are developed from these.

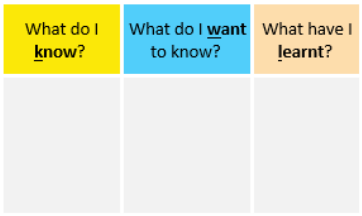
Activity: Use a mind map to record what you know about Mars.

KWL Chart

Purpose: To help organise your thoughts before, during, and after a learning exercise.

Procedure: Identify what you know about a topic. Then, think about what you want to research or learn. After the lesson, reflect on what you have learned.

Activity: Use a KWL chart to organise information about Mars.



Activity: Mars Facts

In small groups, students will find out as much as they can about Mars and compile the information they find into a list of facts. Provide students with a list of suggested questions and/or topics to guide their research.

Facilitate a class discussion by asking each group to share one interesting fact they learned during their exploration. Record students' responses on the white board to create a collective list of facts about Mars.

Students will use the facts they have discovered about Mars to create a quiz and then test their classmates. Students will include a range of quiz styles, for example multiple choice, true or false or fill in the blank. Students can make their quizzes in Kahoot or Quizizz. Make it fun, engaging, and educational!

Activity: Mars Quiz

1. What is Mars?

A. Rocky planet

B. Gas giant

C. Ice giant

2. Why is Mars called the 'Red Planet'?

A. It is hotter than Earth

B. It is the closet planet to the Sun

C. There is rusty iron on the surface

3. Scientists have found evidence of water on Mars.

A. True

B. False

4. How many moons does Mars have?

A. 1

B. 2

C. 3

5. What was Mars named after?

A. Roman god of the underworld

B. Roman god of love and beauty

C. Roman god of war

6. Humans have not set foot on Mars before.

A. True

B. False

7. What was the first spacecraft to land on Mars?

A. Curiosity

B. Perseverance

C. Viking 1

8. What is the average temperature on Mars?

A. -60 degrees Celsius

B. 0 degrees Celsius

C. 60 degrees Celsius

9. Where is Mars in the solar system?

A. 1st planet from the Sun

B. 4th planet from the Sun

C. 8th planet from the Sun

10. Mars is the only planet that has been explored by rovers.

A. True

B. False

Quiz Answers: 1A, 2C, 3A, 4B, 5C, 6A, 7C, 8A, 9B, 10A

Useful Websites

- Water on Mars – Newsbreak
- Scientists find evidence of `oceans' of underground water on Mars – Newsround
- Life on Mars – BTN
- Mars Class – BTN
- Space Food – BTN High
- Mars – NASA
- About the Planets – NASA
- Mars in a Minute: Is Mars Red Hot? – NASA Jet Propulsion (YouTube)