Teacher Resource

Voyager 1

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. What year were the Voyager 1 and Voyager 2 spacecraft launched into space?
2. Why were the spacecraft launched into space?
3. What did the spacecraft photograph as they flew by one of Jupiter's moons?
4. What else did they discover? Give 2-3 examples.
5. How far away is Voyager 1 from Earth?

Activity: See, Think and Wonder

After watching the BTN Voyager 1 story, students will respond to the following questions:

- What did you SEE in this video?
- What did you LEARN from this story?
- What was SURPRISING about this story?
- What QUESTIONS do you have about this story?



Activity: Q&A

Are you curious about what you saw in the BTN Voyager 1 story? Students will make a list of questions they have about the BTN story and do further research to find answers to their questions.

- *How is the Voyager 1 powered and how long will it be in space?*
- *Where will Voyager 1 go next?*
- *How has the Voyager 1 not hit anything?*
- *How big is the Voyager 1?*
- *What is interstellar space?*



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KEY LEARNING
Students will explore the significance of the Voyager 1 spacecraft mission. Students will design a modern "Golden Record" time capsule which captures a snapshot of life on Earth.

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
Describe the movement of Earth and other planets relative to the sun and model how Earth's tilt, rotation on its axis and revolution around the sun relate to cyclic observable phenomena, including variable day and night length.

Science – Year 7
Model cyclic changes in the relative positions of the Earth, sun and Moon and explain how these cycles cause eclipses and influence predictable phenomena on Earth, including seasons and tides.

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Activity: Glossary

Students will watch the BTN Voyager 1 story and summarise the story in their own words. Students will watch the story again and listen carefully, circling each of the following words as they hear them and recording any unfamiliar words.

INTERSTELLAR SPACE	VOYAGER	SOLAR SYSTEM
NASA	GOLDEN RECORD	LIGHT-DAY

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.

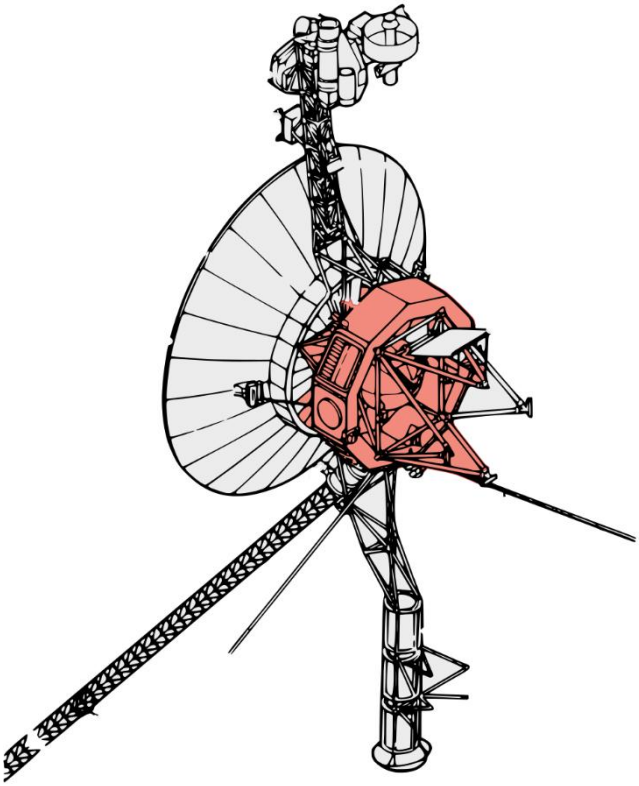
Activity: Research Project

Research project - Spacecraft

Students will explore the Voyager 1 or Voyager 2 spacecraft in more detail and respond to the following research questions to create a profile on the spacecraft.

- Who created the spacecraft?
- When was it created?
- What size is it?
- What is the purpose of the spacecraft? Briefly summarise the mission.
- Imagine you are the creator and write a paragraph explaining why you created the spacecraft.
- How has the spacecraft helped people and our understanding of space?
- Include photographs and diagrams in your research.

Students will create a model of the spacecraft using recycled materials and display them in the classroom.



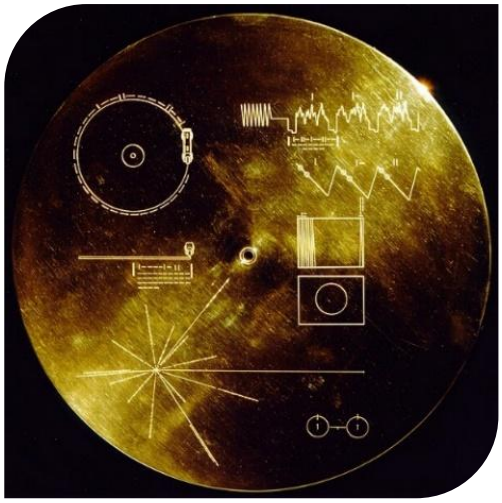
Wikipedia: Voyager 1

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Activity: Voyager's Golden Record

The Voyager 1 and Voyager 2 spacecraft carry a *Golden Record* that contains sounds and images that portray life on Earth and are intended for any intelligent extraterrestrial life form who may find them. Ask students to respond to the following questions:

- What is the *Golden Record* onboard Voyager? Write a brief explanation.
- Why did scientists decide to send it into space?
- What information does it contain? Give some examples. Here is more information about what's on the *Golden Record.*
- What would you include on a *Golden Record*? Give reasons for your answer.
- What message would you send to aliens? What would you want them to know about Earth?
- What does the *Golden Record* tell us about human's curiosity and hope about finding alien life?



NASA: Sounds of Earth record cover.

Sounds of Interstellar space

Watch this video that explains how NASA's Voyager 1 spacecraft captured sounds of Interstellar space. Why was this an important moment in space exploration?

Activity: Time Capsule

Ask your students, "if you could send a message about Earth and humanity into space what would we want extraterrestrial life to know about us?". Discuss and brainstorm as a class.

Class Discussion

- What would you want extraterrestrial life to know about Earth?
- How would you explain what it is like to be human without using words?
- What sounds and music represent humans?
- What images show what life is like on Earth?

Activity

Students will imagine they have been asked by NASA to create a "Golden Record" time capsule which will be carried on a spacecraft into interstellar space. Students will explore how images, sounds, greetings and music can communicate information about Earth, humanity and our cultures. It will capture a snapshot of life on Earth in 2026 and is designed as a message to be discovered in the future. Students will use the following to guide them through this activity.

Mission rules

- Positive – focus on the beauty, curiosity and diversity of Earth when creating your "Golden Record".
- Common Language – use sounds, visuals and symbols to convey your ideas, without using words.

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- Limited Space – choose 5 to 10 items in total as the spacecraft has limited space. You will need to justify and explain why you've chosen these items and why they are important.

Select the contents

- Greetings – Record short greetings in all the languages spoken by students in your class.
- Sounds of earth – Capture everyday audio clips, in the classroom and in the school yard. They need to reflect life without using words.
- Music – Pick 2 or 3 songs that reflect different human emotions, for example, inspirational, curiosity and joy.
- Images and drawings – Draw or select photos showing human daily life, your favourite foods, animals and plants, and Earth's landscapes.

Create

- Make a record using cardboard and cover it using gold foil or paint.
- Include a small plaque identifying the time and place of origin.
- Include a map showing where Earth is in the Solar System.
- Use a tablet to record your audio. Compile your recordings, music clips and photos in a digital playlist or generate a QR code.

Reflection

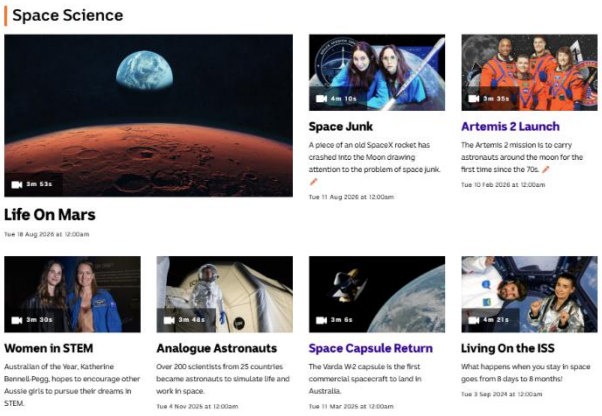
- Why did you choose these images, sounds and greetings?
- What does your "Golden Record" teach us about life on Earth?
- Compare your "Golden Records" with your classmates.

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 BTN's collection of Space Science stories



Useful Websites

- Voyager Signal – BTN
- Voyager – BTN
- Voyager – NASA
- The Golden Record – NASA
- Nasa's Voyager 1 approaches one light-day away from Earth – Newsround

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