

Teacher Resource

SpaceX Launch

Focus Questions

1. Briefly summarise the BTN *SpaceX Launch* story.
2. Where is Cape Canaveral? Locate using Google Maps.
3. Complete the following sentence. The SpaceX Dragon capsule is travelling to the International _____.
4. The United States hasn't launched its own astronauts in the last 9 years. True or false?
5. How have NASA space shuttles been used to explore space?
6. When did NASA retire the space shuttles?
7. How have US astronauts been travelling to space? What were the disadvantages?
8. Who is the CEO of SpaceX?
9. What do some people say is the future of space exploration?
10. What is your favourite moment in space exploration history? Explain your answer.

Activity

What do you see, think and wonder?

After watching the BTN *SpaceX Launch* story, students will respond to the following questions:

- What did you SEE in this video?
- What do you THINK about what you saw in this video?
- What does this video make your WONDER?
- What was SURPRISING about this story?

Activity

Class Discussion

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

- What was unique about the SpaceX Dragon launch?
- What do you know about SpaceX?
- What do you know about NASA?
- Do you think space exploration is important? Why or why not?
- How has space exploration changed over time?
- What do you think the future of space exploration will look like?

Key Learning

Students will explore how spacecrafts and space missions help us understand the Solar System. Students will investigate the history of space exploration.

Curriculum

Science – Year 3

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

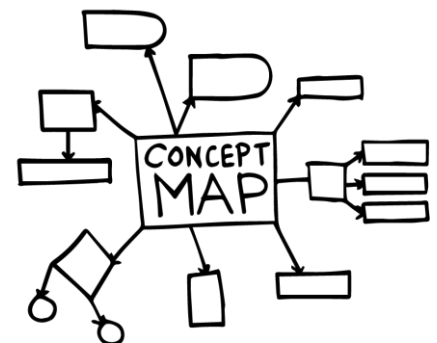
Science – Years 5 & 6

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.



Activity

Glossary

Students will find definitions for the following key words which relate to spacecrafts and how they are designed. Students may want to use pictures and diagrams to illustrate the meaning and create their own glossary. Throughout their research students will add words and definitions to their glossary. Here are some words to get your students started.

Payload	Orbit	Launch
Aerodynamics	Propellant	Escape system

Activity

Create a model

In this activity, students will think like engineers and build a model of their favourite spacecraft. Students will choose one of the spacecrafts pictured below or choose another spacecraft which interests them.

SpaceX Dragon



Apollo



International Space Station



Vostok 1



Soyuz



Discovery



Before creating their models, students will respond to the following:

- Sketch a diagram of the spacecraft and label important features.
- What will the size and scale of your model be?
- What do the different parts of your spacecraft look like? Visit this [NASA website](#) to learn more about the parts of a spacecraft. For example, navigation, structures and antennas.
- What materials will you use to make your model spacecraft? Find the objects you will need to construct your spacecraft.
- What tools will you need to build your spacecraft? Make a list.
- Will you be able to test the aerodynamics of your spacecraft? How?

Students will then create a model of the spacecraft using the materials they have collected and display them in the classroom. You may want to use a template which can be used to make scale models - see examples of some spacecraft models below.

[Build your own scale models of JPL Spacecraft](#)

[Template for Hubble](#)

Design your own spacecraft

Alternatively, students will imagine they are engineers and design their own spacecraft. Students will respond to the 3 questions below, which are the same 3 questions engineers at NASA need to answer when designing vehicles for space missions.

- Where would you go?
- What kind of spaceship would you design?
- How would you build it?

After responding to the above 3 questions students will create a 3D model of their spacecraft using materials of their choice (for example, recycled materials, clay or 3D printed model).

Activity

Research project - Spacecraft

Students will choose a spacecraft to explore in more detail (this could be the same spacecraft they built a model for – see above activity). Students will then 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?
- How much did it cost to build?
- What is the purpose of the spacecraft?
- Can it carry passengers? How many?
- Imagine you are the creator and write a paragraph promoting the spacecraft.
- Did it complete any missions? Briefly summarise the mission and describe its purpose.
- How has the spacecraft and its missions helped us understand the Solar System and beyond?
- Include photographs and diagrams in your research.

Activity

KWLH

The KWLH organiser provides students with a framework to explore their knowledge on the topic of 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 want 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).

- Why do we have the International Space Station?
- Is it important for Australia to be involved in space exploration? Why or why not? Explore the history of Australia's involvement in space exploration. Watch this BTN [Aussie Space Agency](#) story and [Apollo 11 and Parkes](#) story to learn more.
- What types of careers are there in space exploration?
- 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.
- How have spacesuits changed over time? Compare the first spacesuits worn in the 1960s to the spacesuits worn by astronauts on board the SpaceX Dragon capsule in 2020. Watch this BTN [Spacesuit History](#) story to learn more.

Useful Websites

SpaceX's Dragon capsule delivers two astronauts to the ISS with automatic docking

<https://www.abc.net.au/news/2020-06-01/elon-musk-spacex-capsule-docks-with-the-iss/12305800>

SpaceX Launch – NASA

<https://www.nasa.gov/specials/dm2/>

Dragon – SpaceX

<https://www.spacex.com/vehicles/dragon/>

NASA and SpaceX team up for first US astronaut launch since 2011

<https://www.bbc.co.uk/newsround/52526849>

Aussie Space Agency – BTN

<https://www.abc.net.au/btn/classroom/aussie-space-agency/10489084>

Space Science Special – BTN

<https://www.abc.net.au/btn/space-science-special/12133186>