

## Teacher Resource

# Hubble Space Telescope

## Focus Questions

1. What does the *Hubble Space Telescope* story mainly explain?
2. How fast does the Hubble telescope travel?
3. Why are a lot of space telescopes built on mountains?
4. What year was the Hubble telescope launched into space?
  - a. 1980
  - b. 1990
  - c. 2000
5. Describe some the images that the Hubble telescope has captured.
6. What has the Hubble Space Telescope enabled scientists to see?
7. Complete the following sentence. The Hubble \_\_\_\_\_ Field is a series of images taken in 1995.
8. Who launched one last mission to upgrade and repair the Hubble telescope in 2009?
9. What does the Hubble telescope look like? Drawn a picture.
10. What did you learn watching the BTN story? Make a list of 3 facts.

## Activity

### Discussion

After watching the BTN *Hubble Space Telescope* story students will respond to the following:

- What do you THINK about what you saw in the *Hubble Space Telescope* story?
- What does this video make you WONDER?
- Think of three questions you have about the BTN *Hubble Space Telescope* story. Remember that good questions are open-ended (have no right or wrong answer and can't be answered with a 'yes' or 'no').
- Leave your comment on the BTN *Hubble Space Telescope* story page.



## Activity

### Glossary

Students will brainstorm a list of key words that relate to the BTN *Hubble Space Telescope* story. Students may want to use pictures and diagrams to

## Key Learning

Students will explore how telescopes help scientists to explore space. Students will explore, identify and investigate stars, planets and constellations.

## Curriculum

### Science - Years 5 & 6

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

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

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

### Science – Year 5

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

### Science – Year 5 & 6

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

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

illustrate the meaning and create their own glossary. Below are some words to get your students started.

Orbit	Astronomer	Galaxy
Universe	Observatory	Atmosphere
Telescope	Black Hole	Star

## Activity

### KWLH

Hold a discussion after watching the BTN *Hubble Space Telescope* story. What questions were raised in the discussion (what are the gaps in their knowledge)? The following KWLH organiser provides students with a framework to explore their knowledge on this topic and consider what they would like to know and learn.

<i>What do I <u>know</u>?</i>	<i>What do I <u>want</u> to know?</i>	<i>What have I <u>learnt</u>?</i>	<i><u>How</u> 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 is the telescope called Hubble? Where did its name come from?
- How is Hubble similar or different to other telescopes?
- What have we learnt from the Hubble telescope? Make a list and then choose one of the Hubble's discoveries to explore in more detail.
- Why is space discovery important?
- 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.

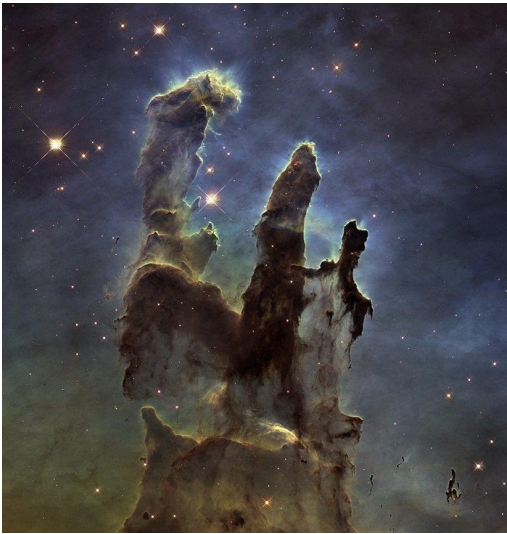
## Activity

### Visual literacy

In this activity students will examine, analyse and query a range of images taken by the Hubble telescope. Students will choose one or more of the images below or find an image of their choice taken by the Hubble telescope. Alternatively, students can look at what [Hubble saw on their birthday](#). Students will then respond to the following:

- What are your first impressions of the image? What does it remind you of?
- Write a short paragraph describing what you see in this image. Write a caption for the image.
- When and where was the photo taken?

- Imagine you are an astronomer examining the images taken by the Hubble telescope. Explain using as many scientific words and terms as you can.
- What questions do you have about what you see in the image?



[Link](#)



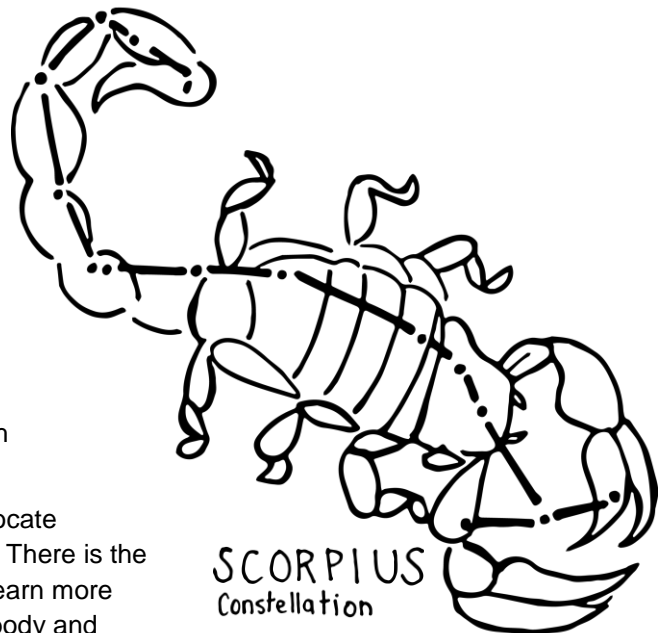
[Link](#)

## Activity

### Daytime stargazing

Bring the stars to your students by using an online application to discover and explore stars, planets and constellations in the classroom. Before starting this activity download a free app like [SkyView](#) onto your classroom hand held device/s. This activity may need to be modified depending on the number of devices available to students.

- If possible, dim the lights in the classroom to create the feeling that it is night time. Students will sit on the ground with SkyView open on their hand-held device.
- Students will point their device at the sky to locate and identify planets, stars and constellations. There is the option to turn on night mode. Students can learn more about what they find by selecting a celestial body and tapping on it. Give students time to explore the night sky.
- Hold a class discussion. What did your students find?
- Students will choose one constellation that they want to learn more about. Students may want to consider choosing the zodiacal constellation in which they were born. Students will develop their own question/s for inquiry, collecting and recording information from a wide variety of sources.
- Students will think of creative ways to display their findings.



## Activity

### Aboriginal Astronomy

In this activity students will look at examples of Aboriginal astronomy and the Dreaming stories about them. Refer to [ABC Science](#) for more information and images to refer to whilst working through this activity.

#### *Emu in the Sky*

Ask students to look at the photographs below showing the Aboriginal Emu in the Sky constellation. Draw their attention to the dark dust clouds, not the stars. The Emu in the Sky lines up with a rock carving in Ku-Ring-Gai Chase National Park. Students can also try to find the Emu in the Sky constellation using free App [SkyView](#). To spot the emu, students will look south to the Southern Cross; the dark cloud between the stars is the head, while the neck, body and legs are formed from dust lanes stretching across the Milky Way.



Source: ABC Science ([link to image](#))



Source: ABC Science ([link to image](#))

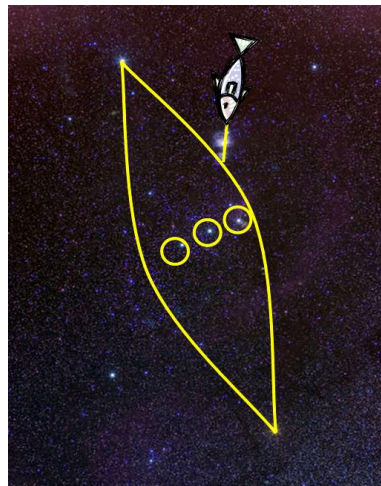
Questions for students:

- What can you see in the picture?
- Where in the night sky can the Emu in the Sky be found? Students can have a go at looking for it.
- Emu in the Sky has featured in Aboriginal storytelling for thousands of years with many different language groups have their own interpretation of the Emu. Research and retell one or more of the stories.

#### *The Canoe in Orion*

Ask students to look at the constellation Orion and answer the following questions:

- What can you see in the picture?
- What is the constellation known as in Australia?
- Where in the night sky can the Canoe in Orion be found? Students can have a go at looking for it.
- What do the Yolngu people in Northern Territory know it as?
- Retell the traditional Yolngu story about the three brothers in a canoe.



Source: ABC Science ([link to image](#))

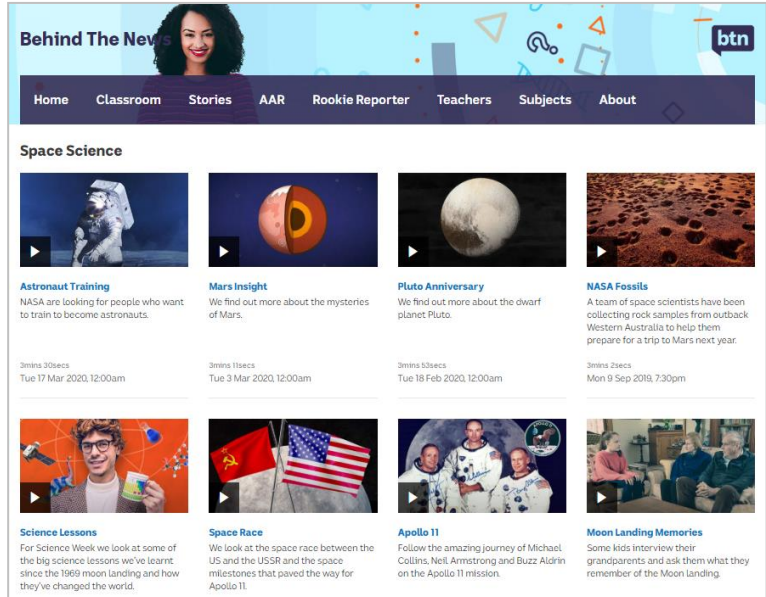
## Activity

### 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**

**Astronaut Training**  
NASA are looking for people who want to train to become astronauts.  
3mins 30secs  
Tue 17 Mar 2020, 12:00am

**Mars Insight**  
We find out more about the mysteries of Mars.  
3mins 15secs  
Tue 3 Mar 2020, 12:00am

**Pluto Anniversary**  
We find out more about the dwarf planet Pluto.  
3mins 53secs  
Tue 18 Feb 2020, 12:00am

**NASA Fossils**  
A team of space scientists have been collecting rock samples from outback Western Australia to help them prepare for a trip to Mars next year.  
3mins 25secs  
Mon 9 Sep 2019, 7:30pm

**Science Lessons**  
For Science Week we look at some of the big science lessons we've learnt since the 1969 moon landing and how they've changed the world.  
3mins 30secs  
Tue 17 Mar 2020, 12:00am

**Space Race**  
We look at the space race between the US and the USSR and the space milestones that paved the way for Apollo 11.  
3mins 15secs  
Tue 3 Mar 2020, 12:00am

**Apollo 11**  
Follow the amazing journey of Michael Collins, Neil Armstrong and Buzz Aldrin on the Apollo 11 mission.  
3mins 53secs  
Tue 18 Feb 2020, 12:00am

**Moon Landing Memories**  
Some kids interview their grandparents and ask them what they remember of the Moon landing.  
3mins 25secs  
Mon 9 Sep 2019, 7:30pm

## Useful Websites

Hubble Birthday – BTN

<https://www.abc.net.au/btn/classroom/hubble-birthday/10526648>

Hubble Space Telescope – NASA

[https://www.nasa.gov/mission\\_pages/hubble/main/index.html](https://www.nasa.gov/mission_pages/hubble/main/index.html)

Hubble: Happy 30th birthday to Nasa's Hubble Space Telescope! – CBBC

<https://www.bbc.co.uk/newsround/52365257>

Hubblesite - NASA

<https://hubblesite.org/>

What did Hubble see on your birthday? – NASA

<https://www.nasa.gov/content/goddard/what-did-hubble-see-on-your-birthday>