Teacher Resource

Episode 8
2nd April 2019

Exoplanets

Focus Questions

1. In pairs, discuss the *Exoplanets* story and record the main points of the discussion.
2. An exoplanet sits within our Solar System. True or false?
3. In what year was the first exoplanet discovered?
4. Who discovered the exoplanet called 51 Pegasi b?
5. Describe what they noticed about the way the exoplanet was orbiting its star.
6. What is the Kepler?
    a. An exoplanet
    b. A star
    c. A telescope
7. The transit method is when a planet crosses in front of a _____. Complete this sentence.
8. How many exoplanets have been discovered so far?
9. What characteristics does an exoplanet need to be Earth-like?
10. What was surprising about this story?

Activity

What do you see, think and wonder?

After watching the BTN *Exoplanets* story, respond to the following questions:

- What did you SEE in this video?
- What do you THINK about what you saw in this video?
- What did you LEARN from this story?
- What was SURPRISING about this story?

Activity

Glossary

Students will develop a glossary of words and terms that relate to exoplanets and our Solar System. Below are some words to get them started. Add words and meanings to your glossary as you come across unfamiliar words throughout your research. Consider using pictures and diagrams to illustrate meanings.

Planet	Exoplanet	Galaxy
Milky Way	Transit method	Universe
Solar System	Habitable zone	orbit

Key Learning

Students will investigate the characteristics of an exoplanet. Students will explore how scientific knowledge is used to discover exoplanets.

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

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Activity

Research

Define: What do I want to know?

Key questions to research

Students can choose one or more of the following questions or come up with their own:

- What is an exoplanet?
- When was the first exoplanet discovered? Explore the exoplanet in more detail.
- How are exoplanets different from planets in our solar system?
- How do astronomers find exoplanets?
- How many exoplanets are like Earth? What makes them similar?
- What can we learn by studying exoplanets?
- How are exoplanets different and similar to planets in our Solar System?
- What makes a planet liveable? Think of three characteristics that would make a planet Earth-like.

Locate: Where do I find the information?

What resources will help answer my questions? (Internet, people, resource centre, organisations, print). Discuss with students what a reliable source is.

Select: What information is important for the investigation?

Students may need support to sort through and select relevant information.

Organise: How do I make sense of the information?

Students can organise their research by creating main headings from their questions. Write each heading on a separate piece of paper. Record the information found for each question.

Present: How do we let others know about this information?

Each group needs to discuss then decide on the best way to present the information. Possibilities could include:

- A `Did You Know' Facts sheet
- Infographic
- Oral presentation
- Prezi presentation
- Create an infographic using Canva

Evaluate: What have we learnt?

Each group reflects on what they have learnt about exoplanets during their investigation. Students will reflect on their learning and respond to the following.

- What I learned...
- What I found surprising...
- What I would do differently next time…

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Activity

Discover a new exoplanet

Students will imagine they have discovered a new exoplanet which has never been seen before. Use the following as a guide for this activity:

- Illustrate the new exoplanet using only a black felt-tip pen on a piece of A4 art paper – include as much detail as you can.
- Give the exoplanet a name.
- Describe what the exoplanet looks like – what are some of its physical characteristics?
- Does it have any interesting or unique features?

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 discover?
- Students will choose one planet they want to learn more about. 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.

Useful Websites

BTN – Planet Nine
http://www.abc.net.au/btn/classroom/planet-nine/10523444?cachebusterTimestamp=1553577118035

https://www.zooniverse.org/projects/marckuchner/backyard-worlds-planet-9/

NASA – What is an exoplanet?
https://spaceplace.nasa.gov/all-about-exoplanets/en/

NASA – Five ways to find a planet
https://exoplanets.nasa.gov/5-ways-to-find-a-planet/

NASA – What is a planet?
https://solarsystem.nasa.gov/planets/in-depth/

ABC – How the sky works: A beginner's guide to finding stars and planets
http://www.abc.net.au/news/science/2017-04-04/a-beginners-guide-to-finding-planets-and-constellations/8373718

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