Teacher Resource

Green Energy Tech

Focus Questions

Discuss the BTN story as a class and record the main points of the discussion. Students will then respond to the following:

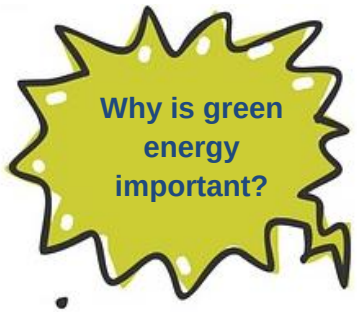
1. Half of our country's electricity may come from solar by 2050. What is the government going to do to make it cheaper for people?
2. What is green hydrogen?
3. How is blue hydrogen created?
4. What is carbon capture and storage?
5. What questions do you have after watching this story?

Activity: Personal response

Write a personal response to the BTN Green Energy Tech story. Ask students to finish one or more of the following incomplete sentences:

- It was interesting to learn…
- It was surprising to learn that...
- Green energy is…
- Green energy can help…
- We can achieve net zero carbon emissions by…

After watching the BTN story hold a class discussion. Use a mind map to record your student's responses.



Activity: Persuasive text

Students will develop a persuasive text for the following statement: "We should be using more green energy technologies". Alternatively, students can write their own statement for a persuasive text.

EPISODE 32
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KEY LEARNING
Students will learn more about green energy technologies, how they work and how they will help the environment.

CURRICULUM
Science – Year 4
Science knowledge helps people to understand the effect of their actions.

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

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

Communicate ideas, explanations and processes using scientific representations in a variety of ways, including multi-modal texts.

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

Solutions to contemporary issues that are found using science and technology, may impact on other areas of society and may involve ethical considerations.

Design and Technologies – Years 5 & 6
Examine how people in design and technologies occupations address competing considerations, including sustainability in the design of products, services, and environments for current and future use.

Encourage students to use as many of the following key words and terms in their persuasive text as they can.

RENEWABLE	FOSSIL FUELS	HYDROGEN
GLOBAL WARMING	GREENHOUSE GAS EMISSIONS	CLIMATE CHANGE
SUSTAINABLE	SOLAR	RESOURCES

Tips for persuasive writing

- Who is your audience? For example, are you directing your argument at kids, teachers or politicians?
- Explore how language choices can have a big impact on persuading your audience.
- Which language devices give the report credibility and authority?
- Which are designed to create an emotional response in the listener?
- Provide facts and evidence to support your argument.
- Write in the present tense.
- Check your spelling and punctuation.

Students can use this Read Write Think persuasion map to organise the information they find.

Activity: KWLH

Hold a class discussion about the information raised in the BTN Green Energy Tech story. What questions were raised in the discussion and 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.

What do I know?	***What do I want to know?***	***What have I learnt?***	***How will I find out?***

Research questions for Inquiry

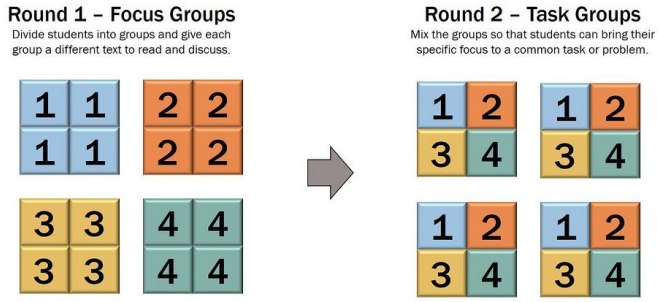
Students will start to think like a scientist and develop their own question/s for inquiry, collecting and recording information from a wide variety of sources. Students may develop their own question for inquiry or select one or more of the questions below.

- Why have green technologies? What are the benefits?
- What are the pros and cons of green technologies?

- How have green technologies improved over the years? Choose one form of green technology to explore in more detail.
- What are fossil fuels and what are the issues with continuing fossil fuel use?
- What do you think is the future of green technologies?
- How can a city reach net zero carbon emissions? Design a sustainable community (think about transport, renewable energies, being water smart, recycling programs, growing food locally, changing habits) to represent your findings.

Activity: Jigsaw learning

In this activity students will work cooperatively to learn more about green energy technology, how they work and how they help the environment. Each group will become experts and then share what they have learnt with other students.



Form groups

Divide the class into groups. Each group will be assigned a different type of green energy (wind, solar, hydro, hydrogen, geothermal, bioenergy and marine) and become an expert. Each group will need to decide how they will collect and communicate the information they find during their research.

Research

Each group will respond to the following questions to become experts:

- What is it?
- How is it made?
- What type of technology does it use? Explain the science behind the technology.
- What are the limitations in producing it?
- What are the benefits or advantages?
- Make a model and/or draw diagrams to help your present your findings.
- What other inserting facts did you learn?

Share

One student from each of the expert groups will form a new group to share the information they have collected. Students will make sure there is one expert from each group at their table. 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?
- What would you do differently next time?

Activity: Quiz

1. **How much of Australia's energy is expected to come from solar by 2050?**

A. 25%

B. 50%

C. 75%

2. **Which of these is a green energy?**

A. Hydropower

B. Solar

C. Geothermal

D. All of the above

3. **What is the chemical symbol for hydrogen?**

A. H

B. He

C. H2O

4. **Hydrogen is cheap to produce.**

A. True

B. False

5. **What is the most abundant element in the universe?**

A. Hydrogen

B. Helium

C. Oxygen

6. **What type of hydrogen is generated by renewable energy?**

A. Blue hydrogen

B. Green hydrogen

C. Grey hydrogen

7. **Where is hydrogen most commonly found?**

A. Coal

B. Plants

C. Water

8. **What is it called when there is a balance between emitting carbon and absorbing carbon from the atmosphere?**

A. Global warming

B. Greenhouse effect

C. Net zero emissions

9. **What is the biggest contributor to climate change?**

A. Burning coal

B. Cutting down forests

C. Increased livestock farming

10. **Australia has committed to net-zero emissions by 2050.**

A. True

B. False

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

Useful Websites

- What is green hydrogen, how is it made, and will it be the fuel of the future? – ABC News
- Solar Energy – BTN
- Clean Energy Technologies – Clean Energy Council
- Zero Emissions – BTN
- Greenhouse Gases – BTN