Teacher Resource

Episode 23
18th August 2020

Underwater Explorer

Focus Questions

1. Discuss the *Underwater Explorer* story with another student.
2. What did underwater explorer Jacques Cousteau invent in the 1940s?
3. We know more about our oceans than we do about deep space. True or false?
4. What does the Proteus look like? Describe.
5. Who will live on the Proteus?
6. Who designed the Proteus?
7. How many underwater habitats have been invented around the world?
8. How is the Proteus different to the Aquarius?
9. What did you learn watching the BTN story?
10. Sketch a design of your own underwater habitat.

Activity

What do you see, think and wonder?

After watching the BTN *Underwater Explorer* 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 did you LEARN from this story?
- What was SURPRISING about this story?
- What QUESTIONS do you have about this story?

Students will respond to the following questions. Students can then leave a comment on the BTN *Underwater Explorer* story page.

Key Learning

Students will explore Australia's marine parks; its habitats and the plants and animals that live within these habitats. Students will design and create a 3D model of an underwater human habitat.

Curriculum

Science – Year 5
Living things have structural features and adaptations that help them to survive in their environment.

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

Science – Year 6
The growth and survival of living things are affected by physical conditions of their environment.

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

Science – Year 7
Classification helps organise the diverse group of organisms.

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

Activity

Glossary

Students will brainstorm a list of key words that relate to the BTN *Underwater Explorer* story. Students will then use the words to write their own sentences about the topic. Students may want to use pictures and diagrams to illustrate the meaning and create their own glossary. Here are some words to get you started.

Marine	**Habitat**	**Seafloor**
Species	**Conservation**	**Marine Park**

Activity

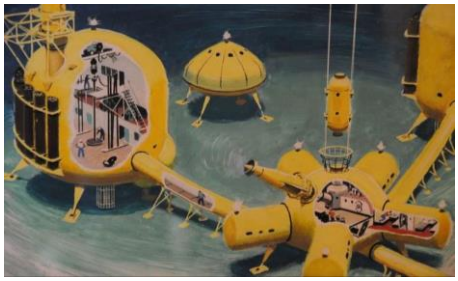
Inquiry Questions

After watching and discussing the BTN *Underwater Explorer* story, what questions do students have 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?***

Students will 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 of the questions below.

- Why do people explore underwater? What are the benefits? Explore one area of underwater research (E.g. marine life, ecosystems, ocean health, biodiversity).
- What is the deepest part of the ocean? Explore the marine life in this area. What are the challenges of exploring the deepest place on Earth?
- What does the ocean floor look like? Study the oceans seafloor and create a diorama.
- What is an oceanographer? Explore an underwater discovery in more detail. For example, the discovery of an ancient Aboriginal underwater archaeological site or the discovery of new underwater volcanoes in the Coral Sea. Why was the discovery important?
- What is the future of underwater exploration? Make some predictions and design your own futuristic underwater habitat.
- What is the history of underwater exploration? Use a timeline to record your findings.



Cousteau's vision of underwater living

Aquarius Reef Base

Proteus

Activity

Create an underwater habitat

Students will imagine they are architects and they have been challenged to design and create an underwater human habitat. Students will brainstorm ideas in pairs and then share their ideas as a class. Encourage creativity during this activity and give students the time to explore their thinking. During the design process students will consider the following:

- Where will your underwater habitat go? Find the location using Google Maps.
- How deep will it go?
- What will be explored in the area? Think about the living and non-living things in the area.
- How will you keep the aquanauts that visit the habitat safe?
- What design features will you include? For example, living stations, laboratories, emergency features.
- What other design considerations will you need to think about? Make a list.
- What is innovative about your design?

Google Maps - The World's Ocean

Students will then design and create their own underwater habitat.

- Sketch a rough design of your habitat.
- Include notes which explain specific design features.
- What materials will you use to make your 3D model?
- Display your models in the classroom.

Activity

Literacy activity – Marine habitats

This literacy activity demonstrates students active listening and interpreting skills. Students will listen to a description of a marine animal's habitat and create a simple black and white artwork illustrating its habitat. Teachers will use the following as a guide for this activity.

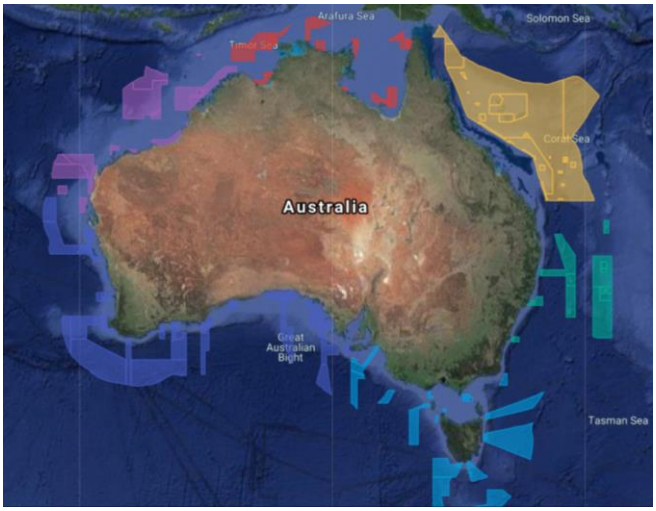
- Find a description of a marine animal's habitat to read aloud to your students. Teachers may want to choose an animal that is an endangered species which lives in Australian waters. Some examples include the dugong or the green turtle. Use Google Maps to delve underwater and find marine animals from around the world.
- Read the description of the animal's habitat aloud to your class as a whole, reading the description 2 or 3 times.
- Students will take notes and write down key words as they listen.
- Students will illustrate the marine animal's habitat using only a black felt—tip pen (0.4 or 0.6) on a piece of A4 art paper. Students will include as much detail as they can.
- Display the student's artwork in a school exhibition.
- We would love to see your student's artwork! Send your artwork to us at btn@abc.net.au
- Challenge students by asking them to recreate the habitat as a diorama or a virtual reality experience using Minecraft.

Activity

Virtual diving

Students will go on a virtual diving expedition using Google Maps to explore the world's oceans. Students will explore a range of areas including Australia's Great Barrier Reef and the Galapagos Islands. Students will then focus their underwater exploration around Australia and choose one location to explore in more detail. Students may want to explore Australia's marine parks using this interactive map. See below for a list of possible areas of exploration:

- The Great Barrier Reef
- The Perth Canyon
- Lord Howe Marine Park
- Arnhem Marine Park



Australia's Marine Parks - interactive map

Once students have chosen an area to explore, they will respond to (one or more) the following:

- Describe the region and include a detailed map.
- What is the depth range and/or average depth of the area?
- What type of habitats can be found in this region? Describe.
- What are some of the unique features of this region? For example, coral reefs, seagrasses or mangroves.
- What species live in and rely on the habitats in this region?
- Choose one species in the region to investigate in more detail and create a creature feature about the species.
- Have any exciting marine discoveries been made in the area? Explain.
- Create a did you know using your research.
- Create a diorama of the region.

Activity

Virtual Reef Diver

The Virtual Reef Diver project allows students to become citizen scientists, classifying underwater images of coral. The data collected is then used by researchers to make better decisions about protecting the Great Barrier Reef. Virtual Reef Diver also allows students to explore 360-degree images of the Great Barrier Reef (through the Google Play store).

Activity

Quiz Questions	Your Answer
1. What percent of the Earth's surface is covered by ocean? a. 17% b. 57% c. 71%	
2. What percent of the Earth's oceans have been explored? a. 5% b. 15% c. 50%	
3. What is the biggest coral reef in the world? a. Florida Keys, United States b. Great Barrier Reef, Australia c. Red Sea Coral Reef, Red Sea	
4. The majority of life on Earth is aquatic? a. True b. False	
5. What is the largest ocean? a. The Indian Ocean b. The Pacific Ocean c. The Atlantic Ocean	
6. The sea sponge is a living sea animal. a. True b. False	
7. How many kilometres is the deepest part of the ocean? a. 1 kms b. 11 kms c. 100 kms	
8. What is the largest living animal in the world? a. Whale shark b. African elephant c. Blue whale	
9. Starfish have eyes. a. True b. False	
10. What is the name of the first inhabited underwater habitat? a. Proteus b. International Space Station c. Continental Shelf Station	

Answers: 1c, 2a, 3b, 4a, 5b, 6a, 7b, 8c, 9a, 10c

Useful Websites

Underwater Research – BTN
https://www.abc.net.au/btn/classroom/underwater-research/11143338

Deep Sea Exploration – BTN
https://www.abc.net.au/btn/classroom/deep-sea-exploration/10524130

Proteus
https://www.fabiencousteauolc.org/proteus

David Attenborough's Great Barrier Reef – An Interactive Journey
https://attenboroughsreef.com/

Australian Marine Parks
https://parksaustralia.gov.au/marine/

Ocean Rubbish Clean-Up – BTN
https://www.abc.net.au/btn/classroom/ocean-rubbish-clean-up/10448624