

LESSON 1: OUR OCEAN VOYAGE WITH PROF ALEX ROGERS

All lesson resources can be found at: <https://encounteredu.com/teacher-resources/frozen-oceans-at-home-x-curric-7-11-lesson-1-our-ocean-voyage>

Lesson overview

This lesson introduces students to the breadth and wonder of the world's ocean. Students will learn about the names and locations of the world's ocean basins before looking at some of the major marine features. The lesson also sets up the students' learning over the next lessons, where they will explore different aspects of the Arctic Ocean.

Details

Time
105 minutes

Curriculum links - Geography
- Name and locate the world's oceans
- Name and locate major marine features
- Write geographical descriptions for major marine features

Age
7-11 (Key Stage 2)

Lesson steps

Learning outcomes

Resources

- | Step | Activity | Learning Outcomes |
|--------------|---|--|
| 1
5 mins | Mission statement from Prof Alex Rogers
Students are introduced to the ocean voyage they will go on for the next six lessons. Opportunities for literacy practice using Prof Alex Rogers's opening statement. | Understand the learning context and outcomes
Say what a conservation biologist does |
| 2
5 mins | Our ocean in numbers
Students guess the answers to ocean questions choosing from a list of numbers on the board. | Engage students |
| 3
20 mins | Naming and locating the oceans
Students follow clues to name and locate the world's oceans. Students also have the opportunity to solve the problem of trying to count the number of ocean(s). | Name and locate the ocean basins
Explain the problem of trying to count the number of ocean(s) |
| 4
20 mins | Marine wonders
Students explore some of the world's major marine features. This is also an opportunity to practise atlas skills or the use of online maps. | Name and locate major marine features
Write geographical descriptions for major marine features
Apply map skills |
| 5
45 mins | Voyage map
Using the idea of a marine chart, students use the map template to make their own voyage map. This provides a general ocean overview for their exploration of the Arctic Ocean. | Demonstrate learning |
| 6
10 mins | Reflection
Use the reflection pyramid to guide students to review their learning for this lesson. | Reflect on learning |



Slideshow

Slideshow 1
Our ocean voyage



Student Sheets

Student Sheet 1a
World oceans map
Student Sheet 1b
Marine wonders card sort
Student Sheet 1c
Voyage map template



Subject Update

Subject Update
How many oceans are there?

Differentiation

By task

To support lower ability students, focus on naming and locating the world's oceans and major marine landscape features. Use the Slides and Student Sheet 1b to facilitate this. Students can demonstrate their learning on the appropriate sections of Student Sheet 1a.

To challenge higher ability students, focus on questioning the logic, practicality and validity of dividing the ocean up into different named, bodies of water. Use the Slides and Subject Update to facilitate this. Students can demonstrate their learning by answering the Slide based questions.

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Step

1

5 mins

Lesson 1: Our ocean voyage

Key Q: 1. What are the seven wonders of the sea?

Outcomes

- Foundation: Say how many oceans there are, name and locate them
- Developing: Name and locate famous marine landmarks
- Competing: Describe the features of famous marine landmarks
- Master: Locate famous marine landmarks
- Expert: Explain the problem with trying to count the number of oceans

Brief from Professor Alex Rogers

Hi, I'm Professor Alex Rogers. I am a marine scientist with a special fascination for the deep sea. I am based at the University of Cardiff and love standing as much time at sea as possible.

I feel so lucky to be able to spend my life trying to understand the huge diversity of sea life.

Your mission today is to find out about our planet's oceans and some of the amazing features it contains.



The purpose of Step 1 is to share the learning outcomes, set the context and engage students with the learning.



Ask students to write the mission title from the top left of the slide, as well as the date in their books. They can then try to guess the missing words from the Key Question, which in this case are "wonders" and "sea".



Read the outcomes on **Slide 2** with the students and ask them to put their hands up to show what they can already do.



Read the mission statement on **Slide 3** from Prof Alex Rogers to put the lesson into context.



This is a good opportunity for students to take the lead and practise reading aloud.

2

5 mins

Outcomes

200

97

71

99

3.7

6

5



The purpose of Step 2 is to bring some "wow factor" about the ocean with some numbers.



Show students the numbers on **Slide 4**. Tell them that the answers to your questions are on the slides. Read the questions and ask students to decide on their answers. Go through the answers as a class, emphasising the importance and scale of the ocean.

Ask students to look at the numbers on the slide. The answer to your questions will be one of those numbers and they have to guess.

1. What percentage of the Earth's surface is covered by water? (71%)
2. What percentage of the ocean has been explored? (5%)
3. What percentage of living space is in the ocean? (99%)
4. What's the average depth of the ocean in kilometres? (3.7km)
6. What percentage of the Earth's water is in the ocean? (97%)
6. How deep can light go in the ocean in metres? (200m)
7. How many teaspoons of salt in every litre of sea water? (6 tsps)

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Step

3

20 mins

What are our oceans called?

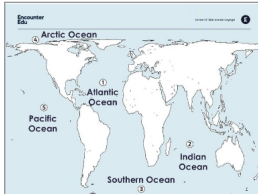
Foundation

Say how many oceans there are, name and locate them.

What are our oceans called?

The five main oceans on Earth are labelled with a number. Use the clues below to work out the names of the oceans:

- This is the UK's closest ocean.
- This ocean is named after the country that has the second largest number of people living in it.
- This ocean is named after the compass point opposite North.
- This ocean is named after the cold place at the South of the Earth.
- This ocean is an anagram of 'capicli'.



How many oceans are there?

Advanced

Explain the problem with trying to count the number of oceans there are.

How many oceans are there?

Advanced

Explain the problem with trying to count the number of oceans there are.

How many oceans are there?

Advanced

Explain the problem with trying to count the number of oceans there are.

How many oceans are there?

Advanced

Explain the problem with trying to count the number of oceans there are.



The purpose of Step 3 is for students to learn the names and locations of the world's oceans, and for older students to appreciate that the five oceans (or more correctly the five ocean basins) are all connected.



Hand out **Student Sheet 1a**, and show students the Learning Outcome on **Slide 5**.

Next show students the clues on **Slide 6**. The aim is to use the clues to work out the names of each of the numbered oceans and to label these on the map on **Student Sheet 1a**.

Review with your students, using **Slide 7**.



Show older students the different ocean diagrams on **Slides 8 to 11**. Use the following questions to promote whole class discussion:

What do the students notice?

Which one of the four diagrams is 'correct'? Why?

Highlight that the water and currents are shared between the different oceans, so they could all be counted as one.



See **Subject Update How many oceans are there?** for more background information on this topic.



Learning Check Point (Assessment for Learning)
Remind students of the learning outcome on **Slide 12**.
Students answer the questions on **Slide 13**.
Students can peer mark the answers using **Slide 14**.

4

20 mins

STUDENT SHEET 1b: MARINE WONDERS CARD SORT

Instructions: Cut out the cards and match the name to the description.

Great Barrier Reef	Description: This has the biggest difference between the high and low tide. It also has the world's largest living structure. Location: The east coast of Canada.
Mauna Kea	Description: This is the highest mountain on Earth. Location: Off the west coast of Australia.
Southern Ocean	Description: This is the deepest place on Earth. Location: In the Pacific Ocean.
Challenger Deep	Description: This is the deepest place on Earth. Location: In the Pacific Ocean.
Red Sea	Description: An extremely shallow, mostly under-water mountain range, that runs for over 10,000 miles. Location: Middle of the Atlantic Ocean.
Mid Atlantic Ridge	Description: This is the saltiest sea on Earth. Location: Between Africa & Middle East.
Bay of Fundy	Description: This is actually the tallest mountain in the world at over 10,000m. It has over 10,000 lakes and rivers. Location: Hawaii, centre of the Pacific.

Learning check point 2

Learning

Name and locate famous marine landmarks.

Describe

Describe the features of famous marine landmarks.

Locate

Locate famous marine landmarks.

Learning check point 2

1. Where is the Great Barrier Reef?
2. Where is Mauna Kea?
3. What is the "Mid-Atlantic ridge"?
4. What is special about the Red Sea?
5. What feature is marked on the map?

Learning check point 2: Answers

- Where is the Great Barrier Reef?
Near Australia.
- Where is Mauna Kea?
In the middle of the Pacific Ocean.
- What is the "Mid-Atlantic ridge"?
A mountain range under the Atlantic Ocean.
- What is special about the Red Sea?
It's the saltiest sea on Earth.

Learning check point 2: Answers

- What feature is shown on the map?
The Red Sea.



The purpose of Step 4 is for students to explore, name and locate famous marine features.



Hand out **Student Sheet 1b**. Students will need to cut out the cards and then match the names to the descriptions. Encourage them to use the pictures to help.

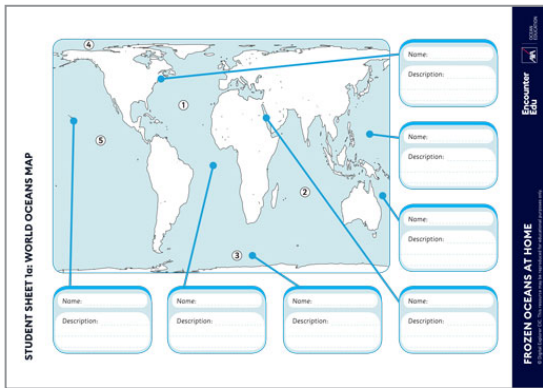
Review the answers with students:

Great Barrier Reef	Largest coral habitat, Australia
Mauna Kea	Tallest mountain (not highest), Hawaii, Central Pacific
Southern Ocean	Roughest ocean, all around Antarctica
Challenger Deep	Deepest place on Earth, Pacific
Red Sea	Saltiest sea, Africa / Middle East
Mid Atlantic Ridge	Underwater mountain range, Middle of the Atlantic
Bay of Fundy	Biggest difference between high and low tide, Canada

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Step



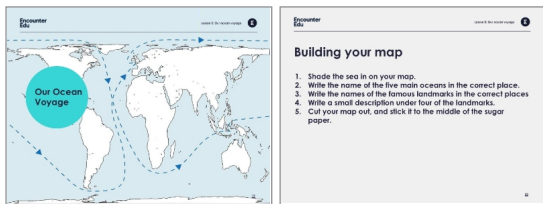
Hand out the atlases. Students use these to find the locations of the features on a world map. Students add the name and description of each marine feature to the map on **Student Sheet 1a World oceans map**.



Learning Check Point (Assessment for Learning)
Remind students of the learning outcome on **Slide 15**. Students answer the questions on **Slide 16**. Students can peer mark the answers using **Slides 17 and 18**.

5

45 mins



The purpose of Step 5 is for students to demonstrate their learning from this lesson.



Show students the map on **Slide 19**. Explain that over the next six lessons, they will be going on a voyage around the world's oceans. An indicative line indicates the learning journey on the map.

Students will make their own map and add a post card home each week demonstrating their learning.

Students should be provided with craft materials to make their own voyage map:

- Large sheet of paper, eg sugar paper at least A2 size
- Scissors and glue
- Coloured pencils or pens
- Copy of **Student Sheet 1c Voyage map template**



Students should follow the steps on **Slide 20** to create their voyage map:

- Copy the outline of the world map onto their sheet of paper
- Add the names of the world's oceans
- Add their name at the top

Optional:

- Add any of the marine features they have learnt about this lesson (they can stick the card sort cards onto the map)
- Copy or cut out and stick examples of ocean exploration pictures (eg research vessel, compass rose, submersible and the elusive giant squid)

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Step

6

10
mins

Final learning check point

From today's voyage, tell Alex:

1. One question you still have
2. Two things that connect this to your previous learning
3. Three new things you learned

Final thoughts from Professor Alex Rogers



Being involved in ocean science is so exciting because there is so much still to know. With some deep ocean habitats, we have only explored 0.1% of the ocean, sometimes as little as 0.0001 per cent.

I get to scuba dive, use underwater robots and work with some amazing people, and I would recommend a career in ocean science to anyone.

And for everyone, just get to the sea, dip your toe in, you never know what you might find!

Alex Rogers



The purpose of Step 6 is to help students see what they have learnt and to pass on a final message from Prof Alex Rogers.



Using **Slide 21**, students write in their books:

- three new things they have learnt,
- two things that connect this to what they know already
- and one thing they still want to know about this topic.

Select a few students to read out their answers.



This is a great place to use questioning to really probe the depth of students' knowledge.



Read **Slide 22** as a class, to round off the "mission".