



Geographers and Scientists

Examine the geography and science of Rapa Nui (Easter Island)

15. Rapa Nui (Easter Island) – Polynesian wayfinding (navigation)

Requirements: tables; A4 sheets of white paper; drawing equipment; bowls; water; battery-operated fan; small torches; compass for drawing circles

Working style: in pairs or small groups (perhaps rotating around experiment stations); as a class

Curriculum: Science; Maths; Geography; English (oracy)

Time: 20 minutes

Polynesian seafarers have traditionally been great explorers sailing the Pacific Ocean without any use of old instruments or modern technology. They only had the natural world to guide them across vast expanses of sea, where there is no sight of land. These 3 mini-experiments will give you an idea of some of nature's clues used to find their way:

- 1. Sunrise and sunset*
- 2. Night sky*
- 3. Wind, waves and currents*

*If you have time in your lesson, watch this excellent [**short film**](#) at the end.*



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Mini-experiment 1: sunrise and sunset

You are going to ‘recreate’ what happens when sun rises and sun sets on the vast ocean. A piece of paper is going to represent the ocean, and torchlight will act as the sun.

Place an A4 white sheet of paper at the edge of a table. Quickly draw a tiny boat in the centre of the paper. Turn on your torch, hold it below the level of the table and gradually bring the torch up in an arc to table level so it shines on the paper (sunrise). Continue raising the torch over the table in an ‘arc’ movement so it lights the whole paper (daytime). Then continue and bring the torch back down to the opposite edge of the paper (sunset). What do you notice about the light pattern as you move the torch from ‘sunrise’ to ‘daytime’ to ‘sunset’?

Discuss how, if you were a Polynesian navigator, you could use the regular rising and setting of the sun to help you check your direction every day. (Don’t forget the sun rises in the same direction [‘East’] and sets in the same direction [‘West’] each day).



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Mini-experiment 2: Night sky

At night, Polynesian navigators used the stars to help navigate across oceans. They learned details of the night sky as stories, passing knowledge through families.

In the middle of the ocean you are surrounded by sea and a '360 degrees' horizon. The millions of stars create unique patterns that can be used to find direction. One Polynesian technique, still used today, is to divide the horizon into 32 sections, each with their own name or story inspired by the pattern of stars in that section through the night.

Draw a large circle on your paper, with your boat at the centre. Use a ruler to divide your circle into 8 equal segments; then divide each segment into 4. Count how many segments (or sections) you have. Write the word 'Home' anywhere outside the circle.

Discuss as a class how you can use the night sky to find your way Home. Add the words 'East' and 'West' for where the sun rises (and stars disappear) and sets (and stars appear). Why might these be important times for navigation?



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Mini-experiment 3: wind, waves and currents

The sun and stars will only get you so far. Natural sea currents (movements of water), winds and human error can change your direction during the day when the sun is high. And not all nights have a clear starry sky when they are covered in cloud.

Expert Polynesian navigators will also use clues in the wind and waves, as well as knowledge of natural sea currents, to help cross oceans between Pacific islands.

Fill a bowl two-thirds full of water; use a battery-operated fan to replicate the wind. Place the bowl near the edge of a table, hold the fan below the table and turn it on. Gradually raise the fan up and over the bowl. What happens to the water? Move the fan to the opposite side of the bowl and direct at the water? Do you notice anything different?

How could you use the wind and waves to help you keep direction? How could you tell if the wind has suddenly changed direction?