Overview – Lesson 5 "The Blue Planet"

Focus: Oceans

Inspired by Attenborough

Theme/Programme Link	Curriculum Links	Learning Objectives/Lesson Outline	Differentiation	Resources
Lesson 5 "The Blue Planet": Focus – Oceans	**Science** **Sc1 – 2d:** recognise when a test or comparison is unfair **Geography** **6c:** understand water and its effects on landscapes and people, including the physical features of rivers [for example, flood plain] or coasts [for example, beach], and the processes of erosion and deposition that affect them	**Learning Objectives:** *Can I complete an experiment to show an understanding of how tides work?* **Lesson Outline:** **Starter activities/engagement:** Surfing Look at extreme surfing videos – talk about the tides/pull of the ocean. **Whole class teaching:** Tides What do we mean by high tide/low tide? Explain the moon's gravitational pull on the ocean which creates tides. Carry out demonstration with 5 children and a rope **Individual work/group work:** Put children in groups of 6 Each child has a specific task Allocate badges to children for each role: Resource manager (collect and return the equipment), Tester (does the testing!), Administration (do all the recording) , Judge (for fair testing), Communications (asks questions and feeds back from group), Personnel (ensures that everyone is doing their job). Carry out the experiment to show that the moon's gravitational pull on oceans creates tides. **Extension:** Create a whole class wall display to explain their findings. **Plenary:** Can children explain the effect of the moon on the tides?	Mixed ability groups for investigation Give planning sheets for writing up experiment for L/A or as required	Lesson plan 5 (see next page) Powerpoint 5: The Blue Planet – Sir David introduction clip – Extreme surfing clip Activities: Lesson 5 – Science investigation planning template You will also need: To create badges for roles in experiment For experiment: plastic bowl, water, plastic ball to represent the world.

Lesson plan 5
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Starter activities/engagement:

Surfing

Show children Sir David's introduction to the lesson (slide 1), then watch the video on extreme surfing (slide 3).

Talk about the tides/pull of the ocean. You may want to look at time lapse footage of tides on YouTube.

Whole class teaching:

Tides

Explain that 70 percent of the earth's surface is covered with oceans. Explain that every 12 hours or so, the seawater rises, then falls back again. These rises and falls are called the tides.

What do we mean by high tide/low tide? Refer back to earlier video clip.

Explain that it is the moon's gravitational pull on the ocean which creates tides.

Explanation: The movement of the ocean waters is caused by the Moon and by the Earth spinning. Gravity pulls the Moon and Earth together. As the Earth turns, the Moon pulls at the ocean water directly beneath it, causing the water to rise. Show slides 4-6 to explain how the tides work.

Demonstrate with 5 children and a rope

One student should stand in the front of the room with the label "Earth."

Have another student stand next to the Earth with the label "moon."

A third student should represent the sun and two others should be gravity.

Take a rope and have the student representing Earth hold it.

The students who represent gravity should tug gently on the rope in the directions toward and away from the moon to demonstrate a spring tide.

Students should tug on the strings in the direction of the moon and opposite the moon to demonstrate the neap tide.

Individual work/group work:

Put children in groups of 6, each child has a specific task. Allocate badges to children for each role:

1: Resource manager (collect and return the equipment), 2: Tester (does the testing!),
3: Administration (do all the recording), 4: Judge (for fair testing), 5: Communications (asks questions and feeds back from group), 6: Personnel (ensures that everyone is doing their job).

Tell children that it is important that each person sticks to their role so that the experiment runs smoothly. Explain the specifics of each role and take questions from children.

Now send groups off to do the following experiment to show that the moon's gravitational pull on oceans creates tides – use slide 7.

1. Place the bowl on a firm, flat surface, then half fill it with water. Place the ball gently in the water so that it floats in the middle of the bowl.
2. Place both hands on top of the ball, and push it down into the water gently but firmly. Look what happens to the level of water. It rises in a "high tide".
3. Let the ball gently rise again. Now you can see the water in the bowl dropping again. So the tide has risen and fallen, even though the amount of water is unchanged.

Children to write up their experiment – use the Planning Template in Activities: Lesson 5 and on slide 8 if required – can they explain how the tides work and draw a labelled diagram?

Extension:

Create a whole class wall display to explain their findings.

Plenary:

Can children explain the effect of the moon on the tides?