

**Video question script: Magnetic stripes**

| Question/Activity   | Likely response   | Rationale  |
|---|---|--|
| Exploring the ocean floor magnetic stripes using the Earthlearningidea, 'Magnetic stripes'  |   | Introduction to magnetic stripes                                 |
| Explain that if a ship tows a magnetic measuring device (a magnetometer) across the ocean, it produces an ocean floor pattern like that shown near Iceland  |   | Concrete preparation: explaining how magnetic stripes are caused |
| Explain that the dark stripes are where the magnetisation is stronger and the white stripes are where it is weaker  |   |  |
| Recall that rocks can preserve remanent magnetisation (petri-dish wax magnetic field)   |   |  |
| Explain that in the area of the dark stripes, the magnetisation of the sea floor rocks is reinforcing the Earth's natural magnetism – increasing its strength.<br>But, in the white stripe areas, the magnetisation of the rocks is in the other direction, reducing the natural field strength   |   |  |
| Explain that we know from sequences of lava flows that some iron-rich rock have reversed magnetisation. These can be plotted out over time as a sequence of normal and reversed magnetisation – showing that the Earth's magnetism flips from time to time  |   |  |
| This could be demonstrated by a series of petri-dish wax magnetic fields stacked on top of each other – with the N and S poles alternating.   |   |  |
| Demonstrate the magnetic stripes activity. Show: <ul style="list-style-type: none"> <li>• the paper striped 'sea floor' emerging from a gap</li> <li>• the pins in the paper</li> <li>• how the pins are magnetised by stroking with a magnet (just doing about four will do)</li> <li>• how, when the paper 'sea floor' is laid out – a magnetometer towed over the top (a magnetic compass being moved over the top) records flips in the magnetic field</li> </ul> |   |  |
| Ask: How does this explain the 'magnetic stripes' recorded on the sea floor near Iceland?   | <ul style="list-style-type: none"> <li>• As new sea floor is formed by cooling igneous rock. – it freezes in a record of the Earth's magnetic field at the time</li> <li>• When the field has flipped, it is recorded in the opposite direction</li> <li>• So we get mirror image stripes as the plates are pulled apart</li> </ul> | Bridging; from the model to reality                              |
| Ask: Why are the stripes so irregular?  | <ul style="list-style-type: none"> <li>• The magnetisation has recorded the shapes of sea bed lava flows – and in some places it flowed farther than others</li> </ul>  | Cognitive conflict: Why are the lines not straight?              |
| Demonstrate cardboard model of how transform faults affect magnetic stripes.  |   |  |