Video question script: Brickquake

Question/Activity	Likely response	Rationale
In teaching about the Earth we use practical activities to explore Earth processes. This activity explores how earthquakes work, and is based on the Earthlearningidea 'Earthquake prediction – when will the earthquake strike?'		Preparation for bridging from the model to real Earth processes
How do earthquakes work and can they be predicted? – that is the question		
What is this? And this?	• we have house bricks, one with a piece of string around it, an elastic bungee cord and a tray of water	Concrete preparation: familiarising pupils with the apparatus and materials
Ask; What do you think will happen as we pull the elastic cord steadily?	• the brick being pulled will eventually move • water in the tray will move	Construction; thinking through the pattern
Ask: What could we measure to find out more about the brick movement and what causes it? What instruments would we need?	We could measure: • how much force is needed before the brick moves (Newton meter) • how far it moves (ruler) • how long it takes before the brick moves as the pressure increases (stopclock)	Construction; thinking through the pattern
Demonstrate the 'brickquake' several times, stressing that each time, the force needed is different, the distance moved is different and the time it takes is different. Unlike most experiments they have ever seen, this is deliberately unpredictable		
Note that you can calculate the total amount of energy released by multiplying the distance moved (cm) by the force needed (Newtons) – and the result (in $N\text{-}cm^{-1}$) is always different too.		
Highlight the fact that, when the brick moves a shimmer passes over the surface of the water in the tray. Explain that these are the surface wave type of seismic wave.		
Ask: If you reflected the beam from a laser pointer from the water surface onto a wall, what would happen when the brick moved? What does this represent?	• The shimmer on the water would be magnified • This shows how a seismometer, a shock-wave detection device, works	Construction: of the pattern shown Bridging: to the idea of a seismometer
Explain that, if we wanted to show how this 'brickquake' causes P- and S- seismic waves, we would have to suspend a slinky spring from the table and see how that moves.		
Ask: How does the model represent a real earthquake?	• The plane between the still and moving bricks is the fault plane • The change in pressure is caused by plate movement • The sudden movement is the earthquake • The earthquake produces shock waves (seismic waves), as seen on the water	Bridging: from the model to reality
Ask: What is it that stops the brick moving when the cord is first pulled? Does this happen in earthquakes too?	• Friction between the bricks • Yes – it is friction between the rocks on either side of a fault	Construction: applying previous learning to

	that stops steady movement as the pressures increase, but causes movement in jumps	understand the pattern being shown
Ask: Is this a real earthquake?	• No – real earthquakes are caused naturally • Nevertheless this activity produces shock waves like a real earthquake and like anything which shakes the ground surface, such as a train or big truck passing	Bridging: from the model to reality