

Video question script: Sand ripple marks in a tank

Question/Activity	Likely response	Rationale
When teaching about the Earth we often use practical activities to explore Earth processes. This example uses the Earthlearningideas: 'Sand ripple marks in a tank'		Preparation for bridging from the model to real Earth processes
What is this? – and this?	A plastic tank, water, sand	Concrete preparation = asking them to describe the apparatus
Ask: What will happen if the tank is rocked gently from side to side?	Some may realise that if the flow of water moves sand, then backward and forward flows should move the sand too	Construction = applying their previous knowledge that flowing water moves sand to this new situation
Demonstrate the formation of symmetrical ripples, with views both from the top and the sides	The rocking motion causes currents that flow backwards and forwards and symmetrical ripples to form. Each current moves sand up the side of a ripple, depositing it in a cross lamination, so interfingering cross laminations form as part of the symmetrical ripples	Listen to the explanation. Cognitive conflict = the new ripple pattern may be unexpected, prompting an explanation of how they form
Ask: Where would you be likely to find symmetrical ripples like these forming naturally?	Symmetrical ripples form where there is loose sand with moderate speeds of water flowing backwards and forwards over the top – currents formed by waves. So symmetrical ripples are key indicators of waves on beaches and in shallow seas	Bridging = applying learning from the activity to the real sand/ water beach/ shallow sea world
Ask: What orientation do symmetrical wave ripples have to the waves and so to the beach and the coast?	Symmetrical ripples form parallel to the wave crests (and so at right angles to the wave movement) and so parallel to the beach and to the coastline	Bridging = applying learning from the activity to the real sand/ water beach/ shallow sea world
Ask: For these ripple marks preserved in sandstone: <ul style="list-style-type: none"> • What were the directions of the wave crests (e.g. right to left) • What was the probable direction of the beach? • What was the probable direction of the coastline? 	For these symmetrical ripple marks: <ul style="list-style-type: none"> - wave crest direction top to bottom - beach direction (although measurements from many more than one ripple would be needed and their mean direction taken) – top to bottom - coastline direction – also top to bottom, but needing many more measurements 	Bridging = applying learning from the activity to ripple marks preserved in ancient sandstone