

Video question script: Best classroom eruption?

Question/Activity	Likely response	Rationale
In teaching about the Earth we often use models to explore Earth processes. This example uses several models and is called: 'Best classroom eruption?'		Preparation for bridging from the model to real Earth processes
We are going to try four different models often used to show eruptions in the classroom and ask, at the end: 'Which of these is the best to show how volcanic eruptions are triggered?'		
'Erupt your own volcano' vinegar and bicarbonate of soda volcano Take them through the ingredients Ask what the cone and the container represent	Most will answer that the cone represents the shape of a volcano and the container is the crater at the top	Concrete preparation = asking them to describe the apparatus Bridging from the model to a real volcano
Ask what will happen when the ingredients are mixed together, explaining the purpose of each	Most will respond that the bicarbonate of soda will react with the vinegar in a chemical reaction to produce bubbles of gas; the soap will ensure that the bubbles don't burst quickly, but cause foam to come out and flow down the slope; the colouring will make the flow more visible and lava-like	Construction = thinking through the different ingredients and what they will contribute
Do the activity	The activity runs as expected	
Ask how closely the result matches a real volcanic eruption	The reaction in the container produces foam that flows like lava, mimicking a quiet and relatively safe eruption (an effusive eruption)	Bridging from the model to reality

'Blow up your own volcano – soapsud volcano' Take them through the apparatus and ingredients		Concrete preparation = helping them to understand the apparatus
Ask what will happen when someone blows into the bottle	Most will say that foam will spray and bubble out	Construction = thinking through the likely result
Do the activity	The activity runs as expected	
Ask how closely the result matches a real volcanic eruption	If the foam sprays out (with hard blowing) this simulates an explosive eruption; if the foam just flows out this is more like a safer effusive eruption	Bridging from the model to reality

'Blow up your own volcano – volcano in a coke bottle' Explain what you are going to do		Concrete preparation = ensuring familiarity with the idea
Ask what will happen when the Mentos™ mints or a sugar lump is added to the coke	Most will say that foam will erupt out of the bottle, they will be unsure if it will erupt explosively or quietly	Construction = thinking through the likely result
Do the activity	The activity runs as expected	
Ask how closely the result matches a real volcanic eruption	Eruption occurs, but with a small bottle of original Coca Cola™ or similar fizzy drink and a couple of Mentos™ the foam flows out of the bottle safely (if you want to simulate an explosive eruption, go outside and use a 2l bottle of diet coke with several Mentos™)	Bridging from the model to reality

'Champagne eruption' Explain what you are going to do Use cheap sparkling wine rather than anything expensive.		
Do the activity	The cork 'pops' and foam sprays out of the bottle and, if you are lucky, can be caught in a glass to be drunk later	
Pose the question from the start again: 'Which of these classroom eruptions is the best to show the processes by which volcanic eruptions are triggered?' Ask groups to discuss this question and choose the best result and explanation	Many will think that the 'Best classroom eruption' is shown by the vinegar/bicarbonate eruption or the coke eruption, since these show the best lava flows. However, volcanoes are not triggered by chemical reactions (vinegar/bicarbonate), blowing in gas (Blow up volcano) or adding Mentos™ (coke/Mentos™). They are triggered by a sudden release of pressure allowing dissolved gas in the magma to come suddenly out of solution, erupting foam (as lava or ash). So the 'Champagne eruption' simulates the best eruption trigger.	Cognitive conflict = reviewing all the options, whilst thinking about the 'trigger' Metacognition = explaining responses
Explain how the 'Champagne eruption' triggering mechanism works. The release of pressure when the cork 'pops' allows the gas dissolved in the liquid to come out of solution explosively – powering the foam out of the neck of the bottle.		Bridging from the model to reality