

Extension ideas - The rock cycle in wax

Using a candle to demonstrate the rock cycle processes

From Jeni, UK

When teaching a low ability year 8 class the rock cycle, I did a similar style practical using wax crayons. I was concentrating upon metamorphism but I think it could be extended to cover all of the rock cycle. Basically the students were given a square of aluminium foil (approx. 30cm by 30cm), a set of coloured wax crayons and a pencil sharpener. First they had to make a sedimentary rock by sharpening layers of different coloured wax crayons on to the centre of the foil (at least 3 different coloured layers). They then folded the foil and squashed the layers with their hands - forming a sedimentary rock. To turn it into a metamorphic rock required more pressure and heat; so they had to stand on their foil packages (bare feet best because of the heat) for about 10 minutes! Due to their being quite small, it didn't work very well. However, a few students insisted on putting the packages inside their shoes and walking around with them in there all day! These worked much better, and the students could see that a change had occurred. It is quite a simple, fun practical to support metamorphism - but quite messy! It could be extended by slightly heating the sedimentary or metamorphic phase, using a bunsen burner or something to induce melting so forming 'magma' which will eventually cool to form igneous rocks.

From Jurassic Mike

I like this. I have been using certain models as visual aids and explore non-correspondence of some aspects of those models to what they represent - e.g. cross section of an egg to represent "layers" of the Earth (crust, mantle, core). The egg shell, for instance, fails to show the oceanic and continental crusts. The thin film of albumin(?) may represent the uppermost mantle so that the egg shell and the film may represent the lithosphere. The egg is an excellent model but exploring non-correspondence encourages critical thinking. This demonstration of rock cycle using the candle is an excellent addendum. While, I think this is an excellent model of certain geologic processes (rock cycle), there may be non-correspondences to explore for a critical thinking exercise.

From Chris, Earthlearningidea team

You're quite right Mike, in that the best discussions about modelling processes involve thinking about how a model is similar to reality, and also how it differs. If teachers use this approach to 'Rock cycle in wax', they should get the very best out of the activity.

From Jane

I use the egg as a model of the Earth demo - sometimes I start with an egg that has not been hard-boiled - just for dramatic silliness. With very young students I also start with toys - hold up a small car and ask the students if it is a real car? No - it is a model of a car; a dinosaur - is this a real dinosaur? Not it is a model of a dinosaur....etc. Then is this a real egg? The students answer yes it is and I say "No it is a model of the Earth....". Another bit of silliness that works.

From Mary, New Mexico

I, like Jurassic Mike, have often used an egg as a model for the Earth when introducing the structure of the Earth and plate tectonics. His comments encouraged me to think about the importance of how the model works and how it does not work. I once read somewhere that many students think that volcanic lavas are partly vinegar, because of the ubiquitous use of vinegar and baking soda models for volcanoes. In a workshop for future teachers that I just concluded, I began with a structure activity in which students were asked to explicitly list what aspects of the model were valid and what aspects were not. The first exercise in model evaluation was guided, but by the end of the workshop students were doing it independently.

From Peter, Earthlearningidea team

We certainly have not come across the misconception about volcanoes containing vinegar! This shows how careful teachers must be in using small scale modelling of some of the Earth's major features, but also provides excellent scope for extending pupils' thinking.

From Mary, New Mexico

To follow up on my previous comment, the future teachers really liked the rock cycle with a candle. They did evaluate how the model worked and then thought about extensions to other parts of the cycle.