Models are ways to explain something we can observe. Scientific models and theories have 2 particular characteristics – that they are simple and that they explain all the current evidence. Having students generate models gets them to be active learners and to be critical with models they generate.

Solid-Liquid-Gas (year 7 and 8)

1) Ask what properties do solid, liquid and gas have. How can you tell them apart?
2) What are the observations of heating ice to water to steam? Reverse?
3) Use simulation to engage and observe solid-liquid-gas particles.
4) With some of the observations propose an inference. This forms the basis of a model.
5) This model can then be tested further in simulations or compared with the particle theory of matter.

Atomic model(year 10 and 11)

1) Starting with Dalton's model – in what way did they match observations? What observations didn't they explain?
2) Repeat with other models.

Chemical and Physical change

1) Pre-diagnostic test to identify chemical and physical changes.
2) What is the chemical formula for water?
3) Run through simulations that show that water changing states does not change the actual formula for water. Conclude that water changing states is not a chemical change.
4) Relate this tearing paper, etc.
5) Using simulations to show chemical reactions and having students look at word equations -> and conclude that chemical reactions involve producing new chemicals.