# **Activity C**

# **Ideas about particles**

Developed by Sam Peyton

### Introduction

This lesson is based on a concept cartoon activity, in which students are presented with three theories and some evidence. Through discussion they have to select the theory that they believe and justify their decision by referring to the evidence. This lesson gives teachers the opportunity to elicit the students' ideas about particles, a concept that many find difficult and about which many hold misconceptions.

## **Objective**

Pupils will learn about the role of evidence in science.

This lesson also provides the teacher with an opportunity to explore children's initial ideas about particles.

## **Learning Outcomes**

By the end of the lesson, pupils will be able to:

- choose relevant evidence to support a statement;
- produce evidence to support a theory;
- produce evidence to disprove a counter argument;
- participate in discussion.

## **Teaching Sequence**

- A starter activity is used to encourage and assess pupils' involvement. The pupils are presented with the statement; 'I am in a laboratory'. They are then asked, 'What evidence backs this up?' The teacher collates a list of evidence statements on the board, and asks the students which of the statements are relevant and which are not. The activity serves to model the idea of evaluating relevant evidence.
- The teacher presents a concept cartoon with evidence statements and asks the pupils to decide which character they agree with. They are then asked to select the evidence that backs up their choice. They can use the evidence statements provided or their own evidence.
- The teacher presents a scenario about condensation and gives the pupils three theories that can serve to explain the scenario. The correct theory is fairly obvious,

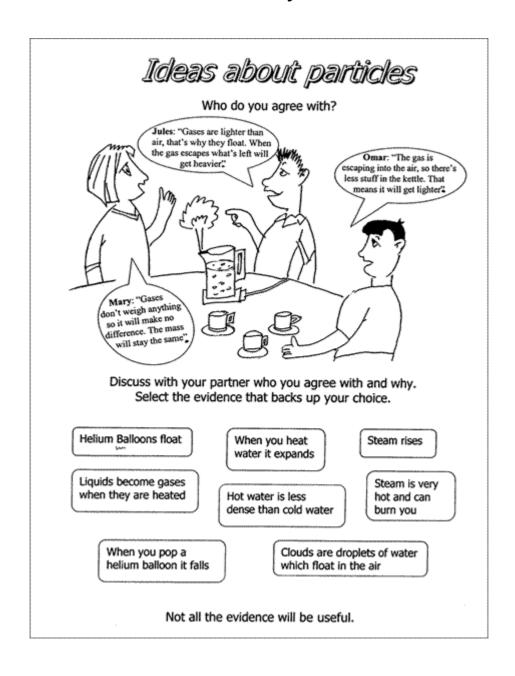
but the task is for pupils to provide evidence why this theory is correct and the other theories are incorrect.

• In the plenary, the teacher provides a writing frame to help the pupils to document their choices and evidence.

# Writing Frame: Theories and evidence

I believe	's theory.
I believe this theory I	ecause
I don't believe	's theory.
I don't believe this th	eory because
I don't believe	's theory.
I don't believe this th	eory because

# **Student Activity Sheets**



# **Student Activity Sheets**

If Jules held a mirror above the kettle as it boiled small water droplets would begin to appear. This is condensation.

How do the water droplets get there?

### Theory 1

The mirror is upside down so the water in it runs to the outside and gathers on the shiny surface.

### Theory 2

The steam hits the surface of the mirror and cools down and turns into a liquid.

### Theory 3

When you are holding the mirror your hand gets hot and sweaty. The sweat drips down onto the mirror.

Which theory do you support?
When else do you see condensation?
Think of evidence to prove your theory.
Think of evidence to disprove the other theories.