

Introduction

The Passport bridging activity is intended to show a clear progression from the Year 6 targets to the Year 7 targets opposite. 'Solutions' is one part of the Science Passport unit. It is an investigation activity that fills pages 8, 9, 10, and 11 of the Science Passport. This activity should be accessible to a wide range of abilities.

Running the activity

Year 6

Ask pupils to think of everyday examples of dissolving solids in water e.g. sugar in a cup of tea, salt in water for cooking, and to suggest ways in which they could make a solid dissolve faster. They will probably have considered this question in earlier years. An example with a liquid that is not water would also be useful.

Ask them to suggest what might help a solid dissolve more quickly e.g. stirring, size of the grains of solid, temperature of the water, volume of water. Help children to decide which suggestions to investigate and how to carry out a fair test e.g. try using the same amount of solids (mass or volume measure), the same number of stirs, the same volume of water and varying the temperature of the water. Introduce the pupils to the worksheet. This can be done verbally by posing the questions and displaying Vicky's and Will's different ideas. Then carry out the practical work.

Year 7

This is best organised as a groupwork activity with each group contributing one point to the graph.

Safety

Year 6

Hot water hazard and spilled water.

Further safety information can be found in *Be Safe!*, ASE 2001 (3rd edition).

Year 7

Heating hazard.

Wear eye protection.

Potassium nitrate: oxidising hazard (crystals only, not solution).

Do not ingest the solution.

Crystals are more easily produced in worn test tubes with scratches rather than new tubes. The scratches provide nucleation points for the crystals.

Copper sulphate (if used) is toxic.

More ideas

Year 6

The activity can be carried out with salt crystals or sugar crystals of different sizes. E.g. Caster sugar, granulated sugar and crystal sugar are of different grain sizes. The melting jelly cubes make interesting and beautiful patterns. These could be explored in dance and art, as paintings or in print.

Year 7

Copper sulphate crystals (hydrated) are an alternative, but potassium nitrate works much better.

Learning outcomes

Year 6

- Identify several factors that affect the rate at which a solid dissolves.
- Investigate an aspect of dissolving, presenting results obtained in a suitable graph and explaining what the results show.
- Use the graph to predict further.
- Identify a range of factors that may affect how fast solids dissolve.
- Use a fair test to investigate a question and explain how it was fair.
- Describe one or two factors that help a solid dissolve more quickly.

Year 7

- Make measurements of temperature and mass; present experimental results as line graphs, pointing out patterns; describe observations and explain these; identify patterns in data about solubility.
- Explain the meaning of the term 'saturated solution'. Begin to use the particle model to explain what happens when a solid dissolves in water, explaining why mass is conserved.
- State that there is a limit to the amount of solid that dissolves in a particular volume of water.
- Describe differences between the masses of different solids that dissolve in the same volume of water.
- State that some solids dissolve more in some liquids than others.

Where the activity fits in

QCA Unit 6C *More about dissolving* and Unit 7H *Solutions*

Skills

Communication, numeracy, group work, managing own learning.