Science investigations

Science investigations

Over recent years fair testing has been the main sort of investigation carried out in many school science programmes.

Watson, Goldsworthy and Wood-Robinson (1999) describe 6 different sorts of science investigations:

- Fair Testing. Relationships between variables are investigated. One variable is chosen for manipulation and the rest are “controlled” to make it a fair test. For example when investigating how temperature affects the rate of dissolving, temperature is varied but everything else must stay the same – the solute, the amount of water, the amount of stirring etc.
- Classifying and identifying: This involves students identifying features or tests that allow them to distinguish between different things. For example working out what an unknown substance is by whether it dissolves, smells, melts etc.
- Pattern seeking: These investigations are common in ecological studies. For instance where in the garden are you most likely to find snails? Surveys are also examples of pattern seeking.
- Exploring: This involves making careful observations. Determining what birds eat by carefully observing them in the garden is an example of exploration.
- Investigating models: Here students develop their own model to explain everyday phenomena and decide what evidence they need to gather to test the model. This testing stage could involve any of the previous sorts of investigations.
- Making things or developing systems: These investigations are closely linked with technology where students design something to meet a need. What makes it a scientific investigation is the science knowledge required to complete the task. For example to design a switch a student needs knowledge about electrical circuits.

Different sorts of investigations are more suited to some situations than others. It is important that students are exposed to a wide range of different sorts of investigations.

Watson, R., Goldsworthy, A., & Wood-Robinson, V. (1999). What is not fair with investigations? *School Science Review,* 80(292).

Resource List

- Making bubbles II
- Salt and pepper
- Testing swimsuit fabric
- Investigating crater impact
- Keeping drinks warm
- Which paper soaks up most water?
- Acid rain
- Cottage cheese
- Which will melt first?
- Runny honey

- Blowing up balloons
- Food colouring in water
- Acid, alkali or neutral
- Identify the mystery substances
- Melting ice cubes
- Viscosity of liquids
- Effect of surface area on evaporation rate
- Shasta daisy and dye
- Popped popcorn
- Metal corrosion
- Temperatures around our school
- Finding out about colour
- Which magnet is the strongest?
- Iron filings, sand and salt
- Dissolving milo
- Changes to our piece of pumpkin
- Water flow
- Rolling marbles III
- Powders
- Acid or base?
- Pīkao (or Pīngao)
- What do kiwi eat?
- The best mopper upper
- "I know something about forces." Self-regulated learning during science investigations in a junior classroom

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