

Forensics - investigative learning activities

Introduction

We outline here a number of practical activities which are suitable for pupil investigations covering learning outcomes in the Science component of Environmental Studies at Attainment Levels E-F.

These activities complement those outlined in the SSERC Science & Technology News No. 35 published earlier this year. These were suitable for Levels A-D in Primary and the ones discussed here cover S1/S2 with added recognition of the principles enshrined in a Curriculum for Excellence:-

www.scienceeducation3-18.com/documents/cerv.pdf

What has been developed?

A number of discrete *Detective* activities have already been developed. These include forensic analysis techniques covering chromatography, hair, blood, DNA, chocolate, pollen, burglar alarms and soil (microscopes, vinegar, footprints, filtration and pH).

The teacher sets the scene where a 'crime' has been committed (Fig. 1) and the children then have to work cooperatively in groups to deduce "Who dunnit?"

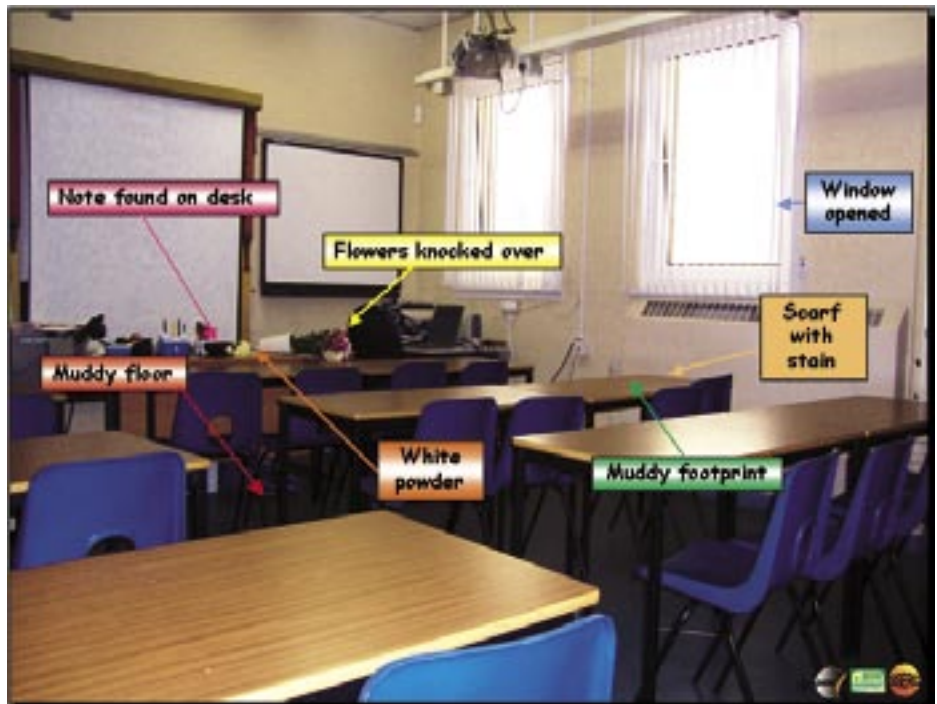


Figure 1 - Teacher sets the 'scene of crime' using Powerpoint slide or photograph.



Figure 2 - Front cover of the Detective pack containing all the techniques to find out "Who dunnit".

Here are a few screenshots showing some of the materials. Other activities under development include designing an ID card, fingerprints, DNA fingerprints and databases. For more information on all of this please e-mail Don Sutherland :

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Be a Blood Detective

Miss Taken asked if the scarf belonged to any of the suspects or if they recognized it - but there was no reply. The scarf did not have a name on it and many pupils in the school owned similar scarves! She decided to find out if she could use stains on the scarf that looked like blood, to eliminate any of the suspects.

All the suspects were seen wearing a scarf on the day Miss Taken's flowers were destroyed - but, when questioned, "Spotty" Jenkins said he had lost his scarf on the football field. "Quaker Claire" insisted her scarf was in the wash. "Smokey" Moore had lent his scarf to his brother and "Smelly" Walker could not remember if he even owned a scarf.

Miss Taken found information on blood testing from the *IT* she thought she could -

1. Use simple chemicals to test if the stain was blood
2. Find the type of blood using a blood testing kit

She hoped the results would help her find the culprit.

Be a Forensic Hair Detective

A scarf was left in the classroom -

Was it left by whoever destroyed the flowers?
How could they find out whether it belonged?
What evidence could they use/provide?

They indeed analysed it the scarf - they could see hairs, but that could be pollen from the flowers and not hair!
The scarf could be just a piece of evidence that could be used to help solve the case.

What equipment could they use?
How could their science lessons help?

Hair is normally collected from the scene of a crime by applying clear tape to a surface and removing a small amount. Stridair tape is more effective at removing hair but tends to also pick up lots of fibres from the surface being tested. Samples are then examined under a microscope and compared to hair samples taken from suspects - this may be from their back-brush or their armpits.

The thickness of hair depends on where on the body it comes from, its age and the type of hair. Hair is thickest at its ends than in the middle.

What do you need?

- Microscope and lamp
- Slides
- Clear sticky tape
- Ruler
- Sample of clothing from crime scene
- Sample of hair from suspects in labelled bags