

# Forensic Science Club



*A guide to teaching students to deliver  
a Forensic event for younger pupils*

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## FORWARD

An inspiring booklet designed to engage a group of senior science students (16 - 18 years old) to plan and deliver a **crime scene science event** to a local community or school venue.

This is a nine month guide for a weekly one hour Forensic Club that is an exciting project for everyone involved. It covers Forensic Science techniques, organising skills, team work, presentation and can be a valuable part of community service.

The authors are experienced presenters of Forensic Science in schools and teacher workshops. The skills used in this book are inexpensive and shown in simple photographs, at a level for the older students to present to younger pupils.

A reminder that risk assessment must be made at all times.

Crime scenes should involve exciting, investigative science, but not cause upset to young people by being violent or macabre.

**Scientific inquiry is at the heart of forensic science.**

**From page 27** you will find extracts from the TPS Publishing forensic science course to assist in finding and providing knowledge to enable the students to complete the crime scene science event.

Students, just as the professionals in the field, are expected to develop testable hypotheses and create logical connections between the design of the experiment and the scientific concepts that underlie the situation. They carry out their investigations, collect and analyse data, formulate explanations, revising their hypothesis if necessary, re-work their investigation, and draw conclusions.

**Knowledge** — Students will have an opportunity to use the science knowledge they have already collected throughout their school experience, such as concepts in biology, geology, weather, chemistry, and physics as a basis for their continued investigations.

**Skills** — Students will use and refine already acquired science process skills such as observing, inferring, analysing, evaluating, as well as those technical skills specific to forensic investigation in order to develop the event.

**Application** — Students will discover that “real-world” science requires a great deal of creativity. They will be expected to take knowledge from all the fields of science, researching where necessary to fill any gaps, in order to make their own meaning about their tasks and come to conclusions about the investigation.

## PLANNING A CRIME SCENE EVENT

By joining the **Forensic Science After School Club**, senior students will learn a number of **Forensic Science practical techniques**. They will understand how to process a crime scene.

With this new knowledge and in teams of 4-5, student will plan a 2 hour **crime scene solving event** to take into a local junior school and present to a selected group/class of pupils.

The event scenario will include;

- Making the crime scene
- An accompanying powerpoint presentation
- Practical tasks for the pupils to do, to enable them to solve the crime.

The whole scenario will be written and organised by the student teams with support and advice from the organising teachers.



## WEEK 1 IN THE LABORATORY

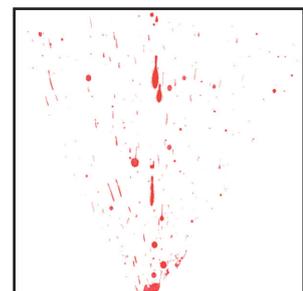
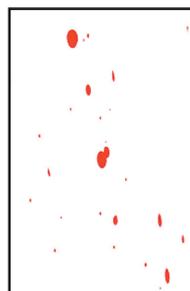
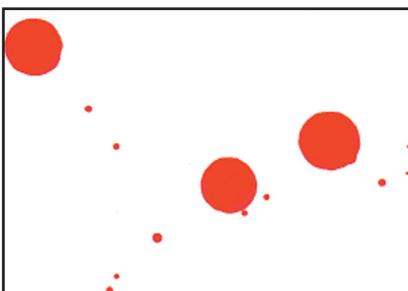
### Blood Spatter

Using diluted poster paint and other coloured liquids.

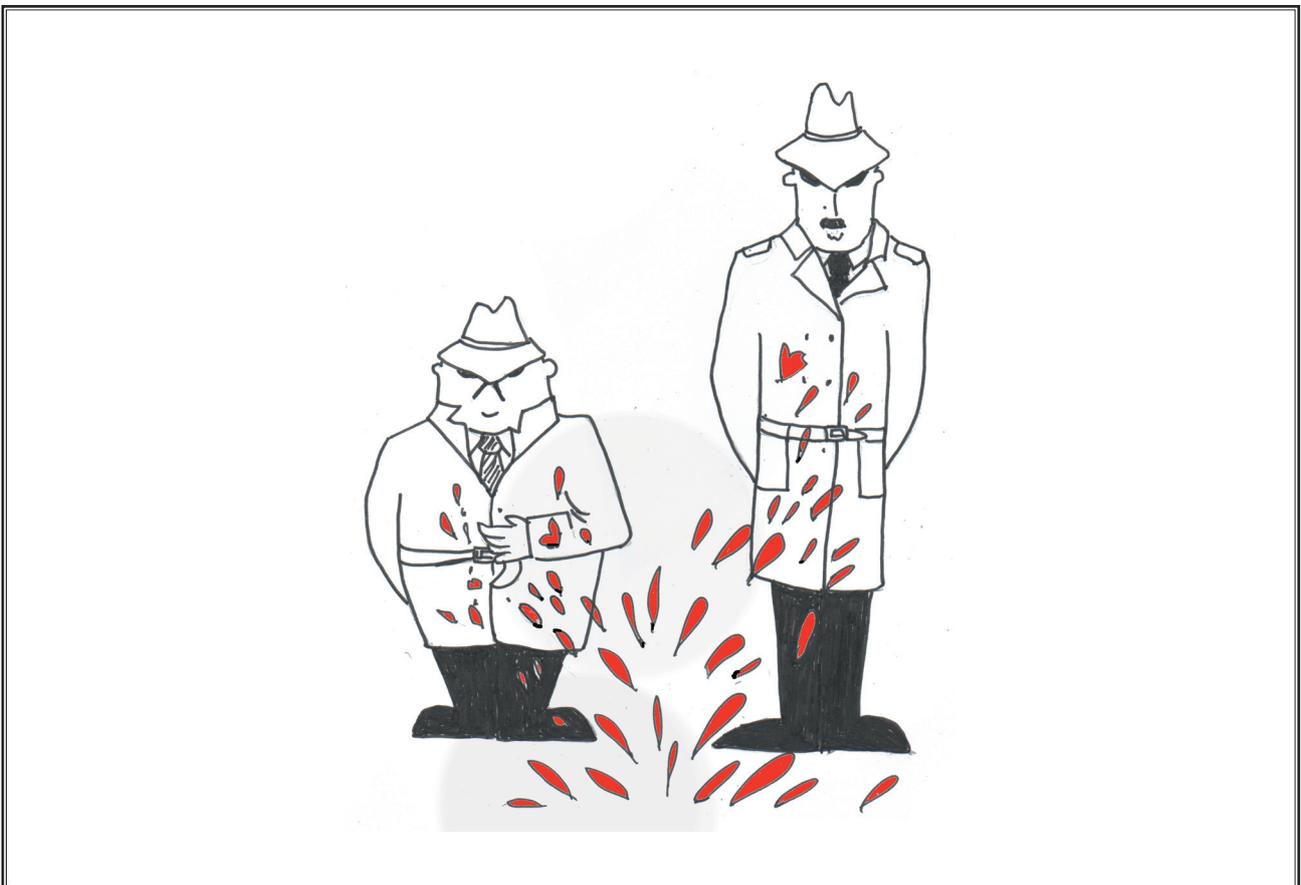
- a. Horizontal blood spatter on paper, acetate and paper towel. How variation in height affect the spatter shape. How different surfaces can affect the absorbency of the blood drop.



- b. Comparing toolmarks in mock blood or waterproof paint, to work out how the marks were made and by which tools for example; brush, comb, pen, spoon (nothing sharp!)



# Bloodstain Pattern Analysis



*Examining a bloodstain pattern found at the scene of a crime can yield information regarding the position of the victim, the position of the perpetrator relative to the victim and the origin of the blood during the incident that created the bloodstain pattern. In this unit, you will, develop your own knowledge for the direction of travel, area of convergence and angle of impact of the blood drops that comprise a bloodstain pattern, become familiar with the different types of bloodstain patterns, learn how to calculate the angle of impact for a blood drop and create a small scale 3-dimensional representation of a bloodstain pattern.*

## Bloodstain Pattern Analysis Notes

Bloodstain pattern reconstruction involves determining the **direction of travel**, **area of convergence** and **angles of impact** of blood drops that comprise a bloodstain pattern.

The analysis and reconstruction of bloodstain patterns can yield the following information: position of the victim, position of the perpetrator relative to the victim and origin of the blood during the incident that created the bloodstain pattern.

When analyzing a bloodstain pattern it is important to be familiar with the behavior of a blood drop as it strikes a surface. Consider the following:

An individual standing upright has been shot in the chest resulting in a non perforating wound. Blood will travel outward from the wound. Examining a single traveling blood drop, we see the following: as the blood drop strikes the floor, the bottom portion of the drop will slow down and stop upon contact and the upper portion will continue to move. The upper portion moves forward forming a tapered end upon rest. The final drop appears as an ellipse with the tapered end pointing in the direction of travel of the blood drop. (See **Diagram 1**)

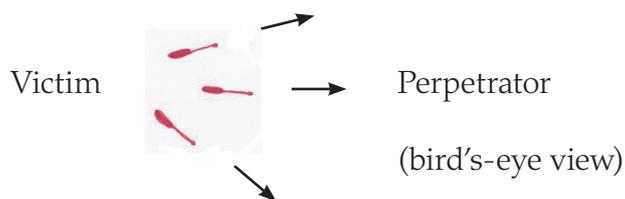


*Diagram 1*

A portion of the spatter created by a drop of blood that was travelling from left to right.

### Direction of Travel

The direction of travel of the blood drops comprising a bloodstain pattern is determined by noting the position of the tapered end in the drops; the tapered end points in the direction of travel. Once the direction of travel is determined, the general positions of the victim and perpetrator during the incident that caused the pattern can be ascertained. (See **Diagram 2**)



*Diagram 2*

Arrows indicating the direction of travel of the blood drops comprising a spatter from a non perforating wound. General positions of the victim and the perpetrator are indicated.