

83. CSI Bruce Manor

Classroom Activity: Crime Scene Investigation

Grade: 5

Strand(s): Understanding Matter and Energy

This task addresses the following overall expectations (properties of matter and physical change only):

- conduct investigations that explore the properties of matter and changes in matter;
- demonstrate an understanding of the properties of matter, changes of state, and physical and chemical change.

and the following specific expectations:

- use scientific inquiry/ experimentation skills to investigate changes of state and changes in matter;
- use scientific inquiry/ experimentation skills to determine how the physical properties of materials make them useful for particular tasks;
- use appropriate science and technology vocabulary, including mass, volume, properties, matter, physical/reversible changes, and chemical/irreversible changes, in oral and written communication;
- describe physical changes in matter as changes that are reversible.

Assessment Categories

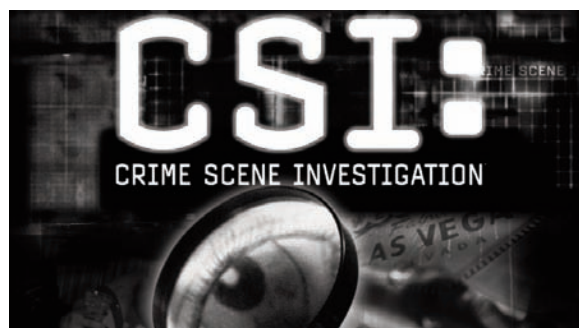
- Knowledge and Understanding
- Thinking and Investigation
- Communication
- Application

Type of Activity

- Independent study (individual/group)
- Extra-Curricular activity

Preparation

- A reminder email needs to be sent out the week prior to the club along with the permission form for pictures to be taken and used for the activity
- Set up a registration desk the day of the club



and take everyone's pictures as they enter. Use the pictures to make up CSI badges for club members to take home.

- Split the members into groups and ask the group members to draw what they thought a scientist looked like. Show a slide presentation of various individuals in careers and ask the group members to highlight scientists among them. At this time, it must be stressed that all occupations presented used science in their jobs - everything from a fashion designer to chef, to a nuclear operator. This is to get the point across that science is used in almost every career choice and therefore it is important to keep taking science throughout academic life.
- Application of science in a Crime Scene Investigation (CSI)

Materials:

- Wallpaper trays, Scotch tape, Powder makeup, Brushes, Magnifying glasses
- Construction paper covered with sheet protector to transfer fingerprints
- Drinking glasses, Non-latex purple gloves, 3 types of pens (Papermate, Staedler and Pilot Fineliner)
- Activity Sheet to determine your own fingerprint type (whorl, arch, etc)
- Activity Sheet to put lifted fingerprints
- Pencils and scrap paper to copy own fingerprints
- Photos of suspects (re hair colour)
- Boxes that hold hair sample

- Feedback sheets
- Snacks - cookies & juices
- Key points for story about crime scene
- Coffee filters - cut up - for notes and samples
- Stapler

Resources:

Generating a fingerprint - <http://school.discovery.com/lessonplans/pdf/forensics/forensics.pdf> Patterns of fingerprints - <http://www.lethsd.ab.ca/mmh/grade3c/fingerprints/fingerprints.htm>

Activity Description

Lord and Lady Bruce had recently thrown a party at the Bruce Manor and jewels were stolen from five different rooms. The crime scene consisted of a jewel box with hair in it, a note from the robber, a glass with fingerprints on it and some crime scene tools i.e., - gloves, wallpaper trough with about an inch of water in it, pencils (4), stapler, 3 black markers (felt tipped - Papermate, Staedler and Pilot Fine-liner that police knew different suspects liked to use, paper (coffee filters cut into strips), magnifying glass, scotch tape, plastic page protector with a black construction paper insert to use for placing the lifted fingerprints on, a soft make up brush and blush (fingerprinting powder). The group members need to determine three things from the evidence - hair colour, fingerprint pattern (whorl, arch or loop) and what pen wrote the note left by the robber by using chromatography.

Have the project coordinator take over as the head of the CSI department. Show the members how to generate fingerprints, lift fingerprints from glass, how to determine which pen was used by studying the ink patterns in the note and protecting evidence.

Generating Fingerprints:

Take the pencil and scribble very hard on a 1" square section of the paper Rub each finger in the lead. Lift

the prints with a piece of scotch tape Put the prints on paper, labelling each finger and thumb.

(Template see) - <http://school.discovery.com/lessonplans/pdf/forensics/forensics.pdf>

Use a template and magnifying glass to determine which pattern fingerprint most resembled - loop, whorl or arch.

(Template see)

<http://www.lethsd.ab.ca/mmh/grade3c/fingerprints/fingerprints.htm>

Fingerprint lifting - dust the blush onto the glass with the soft brush being careful not to disturb the print. Blow off the excess blush and put a piece of tape over the print to lift. Place the tape on the black lined paper protector. Use magnifying glass to determine what fingerprint pattern the robber had. (cut out patterns available for the members that can't lift the print.)

Chromatography - Loop the note over the pencil so that just the bottom writing is in the water. Watch as the colours emerge from the ink up the filter paper. Take each pen and write on a different piece of filter paper keeping track of which sample was written with which pen. Loop each sample around a pencil so that just the bottom writing is in the water. Watch as the colours emerge from the ink up the filter paper. Compare the samples with the original note to determine what pen was used.

Hair colour - look at the hair sample left in the jewel box under the magnifying glass to determine hair colour.

- Once all the evidence had been collected, with little or no hints from the CSI supervisors (1 supervisor per group), suspects known to the police were handed out on a piece of paper. The members then determine which suspect stole the jewel at their crime scene.