



Arts Education for Young People

2011-2012 Season

Crime Scene Guide

TEACHER GUIDE

Kupferberg Center Performances

The Teacher Guide is a convenient source of background information, mini-lessons, and pre- and post-concert activities that coordinate with the performance and Student Guide to encourage learning across the curriculum. Most activities can be easily adapted to suit different age groups. This Guide supports the "Blueprint for Teaching & Learning in the Arts," and includes City and State Learning Standards. Click on the URL's to link directly to suggested websites. Feel free to reproduce these materials, as well as Student Activity Pages that may be posted on this website.

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Please send documentation (photographs, compositions, etc.) of class activities based on this guide so we can share your successes with other schools attending Revelations performances. Thanks!

ABOUT THE PRODUCTION

Mad Science Productions' mission is to spark the imagination and curiosity of children everywhere by providing them with fun, interactive and educational programs that instill a clear understanding of what science is really about, and how it affects the world around us. The Montreal, Canada-based company has over 150 franchises that deliver a wide variety of innovative and engaging programs in their communities, from interactive afterschool programs and in-class workshops, to preschool and camp programs. In North America alone, Mad Science reaches over tens of millions of children and teachers annually, with presentations include touring stage shows and cross-promotions with partners like Kennedy Space Center and Scholastic®.

Download the Teacher's Resource Manual produced by Mad Science at: madsience.org/stageshows/info
Follow prompts. Username: CSILIVE. Password: INVESTIGATE (Note: Username & Password are case sensitive). Select "CSI Live!" and click on "Teacher's Resource Manual."

CURRICULUM FOCUS: SCIENCE

NYC Science Standards 1a, 2a, 3a, 4d, 5c, d, e, f, 7b,d, 8a

Coordinate with Student Guide: *Fingerprinting: You Can Be An Investigator Too!*

Experiment 1: Fingerprinting

Background:

- Each person's fingers and toes (even identical twins) have a unique ridge pattern. Ridge pattern impressions are called fingerprints. Prints are left on surfaces because the glands in our hands and feet secrete oil and sweat. Police agencies dust for fingerprints at the crime scene and try to match them to suspects in their huge international databases.
- There are three main types of fingerprints: arch, whorl and loop patterns. A loop pattern enters from one side, rises, curves, and then exits from the same side it entered. An arch pattern enters from one side, rises, curves, and then exits from the opposite side it entered. Circular ridges have a whorl pattern.

Preparation:

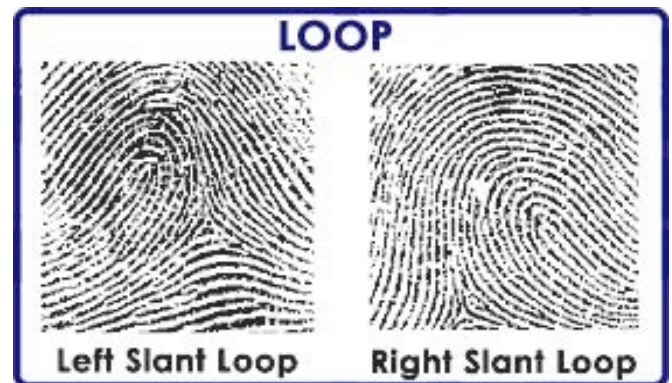
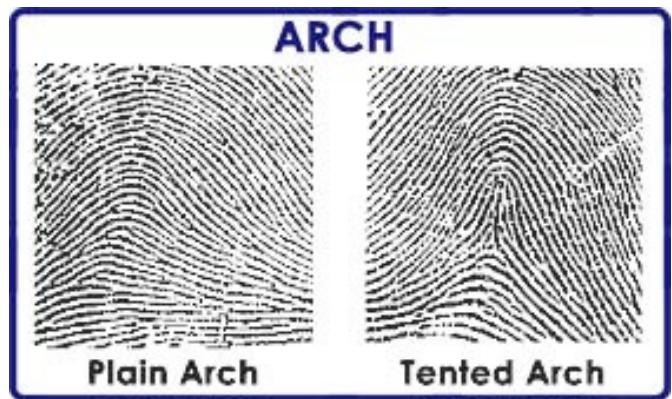
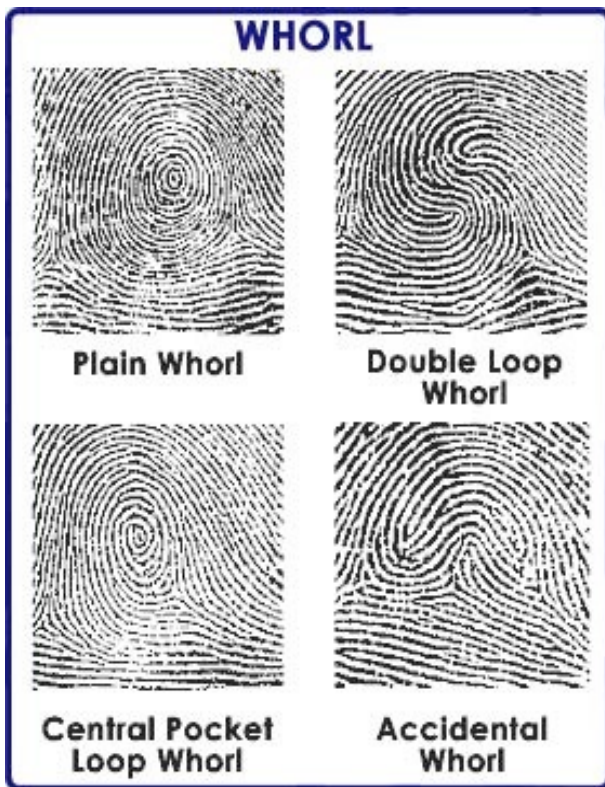
Teacher Supplies: White school glue, blue paint, 5 small cups, 1 craft stick, and roll of paper towels.

Procedure: Use craft stick to mix $\frac{1}{4}$ cup glue and 2 squirts of blue paint and distribute in 5 small cups. Divide class into five groups.

Supplies Per Student: A disposable large, clear plastic cup, thin marker or pen, 3 envelope labels, safety scissor, 2 paper towels, magnifying glass (optional).

Group Activity:

- Have students cut each label in half. Students decide which hand they will print their initials and write “left” or “right” on one label. Then on each of the remaining labels, they write: “thumb, index, middle, ring, pinky.”
- Students now peel off backing and stick the first label on the bottom of their cup. The remaining five labels should be placed evenly around the outside of the cup below the rim. (The prints will be placed on the cup, beneath each label, so be sure kids leave room).
- Taking turns, each child dips a finger into the glue mixture, wipes off excess on the towel, then presses and removes finger on the cup under the appropriate label.
- Students compare their fingerprint patterns with the three most common classifications as seen in the Student Guide, or photocopy the prints on this page and distribute.



Experiment 2: Build A Bear (How DNA Determines Traits and Gender of Offspring)

Coordinate with Student Guide: *DNA Evidence*

Here is a new twist on ‘Build A Bear Workshop!’ While creating an imaginary bear, students will explore a simplified version of how characteristics from two parents are passed onto offspring through DNA.

Preparation:

Teacher Supplies: Category cards

Category 1: Eye Color. Prepare cards that say brown or blue. On the cards that say brown, write “dominant.” On flip side, write “Eye Color.”

Category 2: Fur Color. Prepare cards that say brown or black. On the cards that say brown, write “dominant.” On flip side, write “Fur Color.”

Category 3: Gender. Prepare cards that say “boy” or “girl.” On flip side write “Gender.”

Student Supplies: 2 cards from each category per student; drawing paper, colored pencils or markers, graph paper.

Procedure:

1. Students choose 2 cards from each category at random. These represent the traits of the parent bear.
2. Students choose a partner.
3. Student lay their cards face down in three piles, separated by category.
4. Partners choose ONE card from each of their partner’s categories and turn them face up.
5. Match the face-up cards by category. Dominant cards will determine the traits of the baby bear in the category in which they are drawn.

Results:

<p><u>Category 1: Eye Color</u> Possible Combinations: 2 brown cards = brown eyes 2 blue cards = blue eyes 1 brown card + 1 blue card = brown eyes</p>	<p><u>Category 2: Fur Color</u> Possible combinations: 2 brown cards = brown fur 2 black cards = black fur 1 brown card + 1 black card = brown fur</p>	<p><u>Category 3: Gender</u> Possible combinations: 2 girl cards = female bear 2 boy cards = male bear 1 boy, 1 girl card = male bear</p>
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Students draw the bear they have “built” illustrating the characteristics the baby bear has inherited from its parents according to the cards that were selected.

Extension: Play the game several times to investigate the probability of bears with different characteristics being created by the process of random selection. Create a data graph to record results.

For a more advanced exploration into genetic inheritance, see the activity: Pipe Cleaner Babies (How DNA Determines Traits and Sex of Offspring) at <http://www.biologycorner.com/worksheets/pipecleaner.html>.

CURRICULUM FOCUS: DRAMA

NYC Arts Standard: 1

NYC Math Standards: M4 a, b, c, d, e, f; M 8b

NYS Science Standards: 1, 3, 6, 7

Blueprint for the Arts: Theater: Theater Making

Coordinate with Activity Page: *Whodunit?*

Preparation: Download the Activity Page from our website: www.kupferbergcenter.org/revelations.

Click on “Teacher Guides” and select “Crime Scene Investigation-WHODUNIT?”

Activity: Divide students into teams of 8; 4 on the CSI team, 4 suspects. Prepare blank charts for each team based on our templates. As an alternative exercise, each child can work alone to complete the matrix chart.

Extension: Let each team perform their scenario of “Whodunit” in front of the class.

CURRICULUM FOCUS: SOCIAL STUDIES

NYC Social Studies Standard: 1

NYC Technology Standards: 1, 2

NYS Science Standard: 6

Coordinate with Student Guide: *Forensic Science*

Research Activity: Divide class into small research groups to research the following topics:

- Careers in Forensic Science.
- The History of Fingerprinting.
- The “CSI Effect” – What are juries expecting now?
- The newest technology tools used in forensic science.
- DNA Evidence: How is it used? Does it pose any ethical questions?
- The different branches of science used in forensics: anthropology, biology, chemistry, document research, engineering, medicine, odontology, psychiatry, and toxicology.

Extension: Invite a guest speaker to come in and speak about forensic science and crime scene investigations from your local police station, university or government lab.

CURRICULUM FOCUS: LANGUAGE ARTS

NYC Language Arts Standards: 2c, 3b

Writing Activity: Write What You See or How Reliable Are Eyewitnesses?

Select one group of students to secretly create a scene they will act out in front of the class depicting a crime. It should have multiple things happening at the same time to give a sense of chaos that would actually be on the street. Surprise the class with the scene – do not prepare them to be observers.

After the scene has been complete, ask each witness (balance of students) to describe in writing what he or she saw. Use an alarm clock to set a time limit (one to five minutes based on student abilities). Small groups compare and contrast their details. What did they miss? How accurate were their descriptions? Were they the same, or different?

Extension: Eyewitnesses

Arrange to have an adult or older student enter your classroom and make a scene (e.g., a person searching for lost equipment). Wait 30 minutes, and then have the students write an account of what they witnessed. Compare the details of the students’ descriptions. How does time lapse make a difference in the eyewitnesses account?

Extension: Write a narrative based on a picture of a crime scene (e.g., what do you think happened?)

Activity: Memory Game

Select students to memorize the position of all the objects at the front of the classroom and then leave the classroom. Remaining students change the position of some objects. Selected students return and try to identify what changed.

Discuss: Can powers of observation be trained? Why would this be useful to a CSI team member? What other professions would find keen observation skills useful?

CURRICULUM FOCUS: ART

NYC Arts Standards: 1, 4

Blueprint for the Arts: Visual Art: Art Making, Making Connections

Activity 1: Crime Composites

Have the students draw what they think they saw after you flash an image at the front of the class.

Activity 2: Recreate The Crime Scene

Have students make a shoebox diorama of a crime scene with dollhouse furniture and figurines.

Top-down scenes: Instruct the students to draw a birds-eye view diagram of the crime scene.

Side-view scenes: Instruct the students to draw a side view diagram of the crime scene.

Alternative: You create the “set” of a crime scene on your desk. Then have students complete drawings of your set as top-down or side views.

WEB RESOURCES

<http://www.centredessciencesdemontreal.com/autopsy/index.htm> [Interactive investigation of a murder]

http://pbskids.org/dragonflytv/games/game_dogbreeding.htm [Interactive game on genetic breeding]

<http://pbskids.org/dragonflytv/show/forensics.html?video=forensics> [Video: School kids solve crime]

<http://www.pbs.org/wgbh/aso/tryit/dna/#> [DNA workshop activity]

<http://www.biologycorner.com/worksheets/pipecleaner.html> [Lesson plan: How DNA Determines Traits and Sex]

BOOKSHELF

CSI Expert! Forensic Science for Kids by Karen Schulz. Prufrock Press: 2008

Crime Scene Investigations: Real-Life Science Activities for the Elementary Grades by Pam Walker and Elaine Wood. Jossey-Bass: 1999

Science Sleuths: 60 Forensic Activities to Develop Critical Thinking and Inquiry Skills by Pam Walker and Elaine Wood. John Wiley & Sons: 2006

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Visit us at www.KupferbergCenter.org/revelations

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