ACTIVITY 2-1
Locus’s principle

Introduction:
Locus’s exchange principle states that trace evidence can be exchanged between a crime scene, victim, and suspect, leaving trace evidence on all three.

Objectives:
By the end of this activity, you will be able to:
1. Demonstrate how transfer of evidence occurs.
2. Identify a possible crime-scene location based on trace evidence examination.

Materials:
(per group of four students)
Activity Sheet 2-1
3 fabric squares each about 2½ inches in a separate evidence resealable plastic bag
1 white sock in an evidence plastic bag
4 pairs of tweezers (forceps)
1 permanent marker
2 hand lenses or microscopes
1 roll of clear ¾-inch-wide adhesive or masking tape
2 pencils
4 sheets white paper (8½ x 11")
4 sheets of paper for binding (8½ x 11")
4 pairs of plastic or latex gloves
4 resealable plastic bags
4 sheets of paper for bindles
1 pair of scissors
4 copies of the Evidence Collection label

Safety Precautions:
Wash your hands before starting work.
Refrain from touching hair, skin, or clothing when collecting evidence.
Wear gloves while collecting evidence.

Scenario:
A dead body has been found. The crime-scene investigators determined that the body has been moved after the killing. Trace evidence was found on the victim’s sock. It was determined that the crime could have occurred in three possible locations. Can you match the trace evidence found on the victim’s sock with trace evidence collected from three different locations and determine which location was the crime scene?
Procedure:

Part A: Evidence Collection

1. After washing your hands and putting on your gloves, visit the school library.
2. Open one of the resealable plastic bags, and rub the floor with a fabric square three times. Place the fabric square in a paper bindle, then into a plastic bag, and seal the plastic bag. Label your plastic bag with the location from which your sample was taken.
3. Complete the evidence label, and either attach the label to the plastic bag or place it inside the plastic bag. Seal the plastic bag.
4. Place a piece of adhesive or masking tape over the sealed edge of the plastic bag and write your name across the tape so that your signature begins on one side of the tape and ends on the other side.
5. Repeat steps 1 through 4 at collection site 2 (determined by your instructor).
6. Repeat steps 1 through 4 at collection site 3 (determined by your instructor).
7. Return to your classroom with the three labeled samples.
8. Be sure to maintain the chain of custody with all samples collected. When an evidence bag is opened for examination, the person handling the evidence must open the bag at a location other than the sealed edge (see Figure 2-6).
9. On completion of the examination, the cut plastic bag and all former contents must be resealed into another plastic bag, and the chain-of-custody log attached to the new evidence container must be updated and attached (see Figure 2-6).

Part B: Evidence Examination and Data Collection

Examination of evidence samples

1. Students should wear gloves while examining all evidence.
2. Open a sample bag and bindle from location 1 as previously described by cutting along an edge other than the signed, sealed one.
3. Using forceps and a hand lens or microscope, examine and identify items found on the sample.
4. Record your findings on the data table provided. Be sure to include:
   a. Who collected the sample
   b. When it was collected
   c. Why it was collected
   d. Date
   e. Exact site of collection
5. Press a piece of adhesive tape onto the surface of the fabric to remove any additional evidence that the tweezers cannot pick up. Tape the evidence on white paper and examine it. Add items found to your list of evidence.
6. Return the fabric square for location 1 and all evidence examined to the correct bindle and plastic bag. Seal the plastic bag, relabel it with the chain-of-custody list, and sign off on the plastic bag as described previously.
7. Repeat steps 1 through 7 for location 2 evidence plastic bag.
8. Repeat steps 1 through 7 for location 3 evidence plastic bag.
Return to collect more evidence

1. Choose one member from your group to return to one of the three previous areas examined (i.e., location 1, 2, or 3).
2. The chosen group member should then decide which of the three previous sites should be considered the crime scene. He or she should then return to that location and put on gloves. This group member will not divulge the crime-scene location to his or her fellow examiners.
3. The group member puts on the sock from the plastic bag over his or her own sock. The group member walks around in the selected location. This sock will serve as the victim’s sock, which is now covered with trace evidence from the crime scene.
4. While at the crime scene, the chosen team member carefully removes the sock and places it in a bindle and then a plastic bag. It should then be sealed and labeled with “crime scene,” date, time, and collector’s name, etc. as before.
5. The group member returns to the meeting room to have his or her partners examine the sock evidence.
6. Crime-scene trace evidence should now be treated as described in steps 1 through 7, “Examination of evidence samples.”
7. Your team must try to determine which of the three original locations matches the crime-scene location.
8. Complete the Crime Scene report, listing all evidence collected from the sock with your partner investigators.

Questions:

1. Based on your examinations of the trace evidence, which of the three sites was probably the crime scene? Justify your answer.

2. Did your team correctly identify the crime scene?

3. How might the adhesive tape interfere with your evidence collection?

4. Why were gloves necessary in the collection and handling of trace evidence?

5. What other instruments could be used to improve on your ability to identify evidence?

6. A suspect’s shoes and clothing are confiscated and examined for trace evidence. What kind of trace evidence might be found on the clothes or shoes? List at least five examples of trace evidence from the shoes or clothing that might be useful in linking a suspect to a crime scene.

7. A home burglary has occurred. It appears the perpetrator entered after breaking a window. A metal safe had been opened by drilling through its tumblers. A suspect was seen running through the garden. Three suspects were interrogated and their clothing examined. List at least three examples of trace evidence that might be found on the suspect.

8. Some examples of trace evidence are listed. For each item, suggest a possible location where the trace might have originated. For example, broken glass fragments—headlight from a hit-and-run accident.
### Example: glass fragment

<table>
<thead>
<tr>
<th>Item</th>
<th>Evidence Source</th>
</tr>
</thead>
<tbody>
<tr>
<td>sand</td>
<td>car accident</td>
</tr>
<tr>
<td>sawdust</td>
<td></td>
</tr>
<tr>
<td>pollen</td>
<td></td>
</tr>
<tr>
<td>makeup</td>
<td></td>
</tr>
<tr>
<td>hair</td>
<td></td>
</tr>
<tr>
<td>fibers</td>
<td></td>
</tr>
<tr>
<td>powders or residues</td>
<td></td>
</tr>
<tr>
<td>metal filings</td>
<td></td>
</tr>
<tr>
<td>oil or grease</td>
<td></td>
</tr>
<tr>
<td>gravel</td>
<td></td>
</tr>
<tr>
<td>insects</td>
<td></td>
</tr>
</tbody>
</table>

### Evidence Inventory Label

**Case # _____________________ Inventory # _______________**

**Item #**

**Item description**

**Date of recovery ____________**

**Time of recovery ____________**

**Location of recovery ________________________________________**

**Recovered by ______________________________________________**

**Suspect ___________________________________________________**

**Victim _____________________________________________________**

**Type of offense _____________________________________________**

#### Chain of custody

- **Received from**
  - **Date**
  - **Time** AM or PM
  - **By**

- **Received from**
  - **Date**
  - **Time** AM or PM
  - **By**

- **Received from**
  - **Date**
  - **Time** AM or PM
  - **By**

- **Received from**
  - **Date**
  - **Time** AM or PM
  - **By**
ACTIVITY 2-2
CRIME-SCENE INVESTIGATION

Objectives:
By the end of this activity, you will be able to:
1. Explain the correct procedure for securing and examining a crime scene.
2. Demonstrate the correct techniques for collecting and handling evidence.

Introduction:
The crime scene presents a wonderful hands-on way to review many of the skills described in this chapter. A crime has occurred, and you and your investigative team must secure the area and properly collect the evidence.

Time Required to Complete Activity: 60 to 90 minutes (six students per team)

Scenarios:
Two crime scenes prepared in advance by your instructor

Materials:
(Per group, with six students in each group)
Checklists 1–5
evidence Label
10 evidence inventory labels of sheets
10 resealable plastic bags, 6-gallon size
10 resealable plastic bags, 6-quart size
4 paper collection bags
2 marking pens
4 pairs plastic gloves
1 roll crime-scene tape
4 compasses
1 videocamera (optional)
“bunny suit” (optional)
6 forceps (one pair per person)
4 flashlights or penlights (one per person)
2 floodlights
1 digital camera
10 bindle paper sheets, both large and small
6 hand lenses
sketch paper
2 photographic rulers
1 25-foot tape measure
1 roll ¾-inch masking tape

Procedure:
Your crime-scene team is composed of six students. Each team of students has a first officer, a recorder, a photographer, a sketch artist, and two designated evidence collectors.
By the completion of this part of the activity, each team of students must submit the following:

- A log maintained by the first responder
- Checklists 1 through 5 completed, dated, and signed
- Two sketches—a rough sketch and a quality sketch, both with accurate measurements
- A series of 8 × 10 photographs that adequately encompass the crime-scene location; close-up shots of any evidence, evidence numbered and photographed next to a ruler
- Evidence bags properly packaged, labeled, and sealed

**Part A: Securing and Preserving the Crime Scene**

1. The crime scene is secured by the first officer to arrive. His or her job is to limit access to the crime scene and preserve the scene with minimal contamination. He or she has primary responsibility for:

   - Securing the safety of individuals at the scene; approach the scene cautiously (look, listen, smell) and determine if the site poses any danger
   - Obtaining medical attention for anyone injured at the scene; call for medical personnel for the injured
   - Calling in backup help, including medical personnel to help the injured and/or lab personnel
   - Separating the witnesses so they may be interrogated separately to see if their stories match.
   - Performing an initial walk-through of the area (scan the scene) to provide an overview of the crime scene
   - Searching the scene briefly (scan the scene) to notify lab personnel what equipment is needed
   - Collecting information, including the crime-scene address/location, time, date, type of call, and the names and addresses of all parties involved and present
   - Securing the integrity of the scene by establishing the boundaries of the crime scene by setting up a physical barrier (tape) to keep unauthorized personnel (and animals, if present) out of the area
   - Protecting the crime scene by remaining alert and attentive
   - Documenting the entry and exit of all authorized personnel
   - Providing a brief update to the next-of-command officer to arrive on the scene

The first-responding officer can use checklist 1 to complete all necessary procedures.

**Note:** Later-arriving police or CSI will set up barricades to prevent unauthorized persons from entering the crime-scene area.
Part B: Search and Evidence Collection

Once your designated crime-scene specialists arrive, evidence collectors will actually collect the evidence for processing back in the lab.

2. The recorder has the responsibility of working with the primary officer to maintain updated records. The recorder will complete checklist 2. The recorder will:
   • Document by date, time, location, and name of collector all evidence that is found.
   • Work with the sketch artist to measure and document the crime scene.
   • Help search for evidence, if necessary.

3. The sketch artist has the responsibility of drawing accurate and detailed sketches of the area designated as the crime scene. At the crime scene, a rough sketch is made, complete with accurate measurements. At a later time, a neater (or computer-generated) sketch is completed. Checklist 3 outlines those responsibilities. The sketch artist working with the recorder will complete that checklist.

4. The photographer has the responsibility to:
   • Work with the sketch artist and recorder to document the crime scene.
   • Photograph any victims and possible suspects.
   • Take photos of the crime scene, noting the four points of the compass, the entrance and exit points in the area, any disturbances (damage) at the scene, etc.
   • Note and photograph any evidence encountered both with and without a ruler.
   • Complete photographer’s checklist.

5. The evidence collectors have the responsibility to:
   • Mark off the area around the victim and keep all unnecessary spectators out.
   • Work within the crime scene, wearing gloves to collect evidence.
   • Walk an appropriate search pattern in the crime-scene area. The pattern will be chosen by your instructor. It may be a spiral, grid, or linear pattern, or the area may be divided into zones for examination.
   • Properly handle, bindle, and package any materials considered to be evidence. Remember that the size of the bindle can vary from very small to large enough to package evidence as large as an overcoat.
   • Complete evidence collector’s checklist.

6. The proper handling of evidence includes being aware that:
   • Wet or damp evidence should be placed in a paper bag and sealed.
   • Dry evidence should be placed in a paper bindle and then packaged in plastic bags or envelopes and sealed.
   • Liquid evidence should be stored in sealed, unbreakable containers.
   • Care must be taken to prevent any contamination or damage to the evidence collected.
• Flashlights and penlights can be used to search for hair, fibers, and other small or fine trace evidence.

• All evidence containers should be identified with an evidence label or Evidence Inventory Sheet taped to the container or placed inside the container. Such labels or inventory sheets will be provided by your instructor. The name or initials of the collector should be written over the tape sealing the container. The last page in this activity has a copy of an evidence label.

• If for any reason an evidence container is opened, it should be opened at a location other than the sealed edge. It must be repackaged and resealed with the names of all those who have handled the evidence, along with the original packaging. The name of the new packager should be written over the new seal. This chain-of-custody information is also located on the Evidence Inventory Sheet.

Examining the Evidence
Through examination of the crime scene will hopefully lead to a comprehensive collection of evidence. After careful examination of all the evidence and after interviewing the suspects, each team of investigators will collect information helpful in solving the crime.

Checklist 1: First Responder’s Responsibilities
Place a check mark by each of the following responsibilities as completed:

❑ I approached the scene cautiously (look, listen, smell) and determined if the site poses any danger.
❑ I checked to see if medical attention was needed by anyone injured at the scene.
❑ I called in backup to help the injured.
❑ I secured and separated any witnesses present.
❑ I completed an initial walk-through of the area (scan the scene) to provide an overview of the crime scene.
❑ I notified superiors of the need for additional police officers and CSI technicians at the crime scene.
❑ I secured the integrity of the scene by establishing the boundaries of the crime scene by setting up a physical barrier (tape) to keep unauthorized personnel (and animals, if present) out of the area.
❑ I collected and recorded information, including my name and badge number, case number, address/location of crime scene, time, date, type of call, names of all involved and present parties, as well as the names of everyone present.
❑ I protected the crime scene by remaining alert and attentive.
❑ I documented the entry and exit of all authorized personnel.
❑ I provided the next-in-command officer with a brief update of the situation.

Date________________________Signed___________________________________
Checklist 2: Recorder’s Checklist
Place a check mark by each of the following responsibilities as completed:

- I documented by date, time, location, and name of collector all evidence that was found by completing an Evidence Summary Sheet for each piece of evidence recovered.
- I documented weather conditions, available light, unusual odors, and other environmental conditions.
- I worked with the sketch artist to measure and document the crime scene.
- I helped search for evidence.
- I helped document the location and direction of what was photographed.
- I helped document the location and direction of what was sketched.

Date________________________ Signed___________________________________

Checklist 3: Sketch Artist’s Checklist
Place a check mark by each of the following responsibilities as completed:

I will prepare two sketches of the crime scene—a rough sketch and a carefully detailed sketch—each of which includes:

- All directions of the compass correctly labeled
- All objects and landmarks within the crime scene labeled in correct position and to scale (each sketch should contain two immovable objects at a measured distance)
- A series of carefully measured distances to add to the accuracy of my sketches
- Working with the photographer to document the exact location and direction from which photographs were taken

Date________________________ Signed___________________________________
Checklist 4: Photographer’s Checklist
Place a check mark by each of the following responsibilities as completed:

❑ I worked with the sketch artist, recorder, and evidence collectors to document the crime scene.
❑ I took photos of the crime scene, noting the four points of the compass, the entrance and departure points into the area, any disturbances (damage) at the scene, etc.
❑ I took photographs of any injured persons at the crime scene.
❑ I took close-up photographs of the victim and/or immediate location of the crime.
❑ I took a series of distance photos to give perspective to the crime scene.
❑ I noted and photographed any evidence encountered, both with and without a ruler, and had the recorder and sketch artist also record the location of the evidence.
❑ I took a series of at least eight to ten photographs pertinent to the crime scene. These are of sufficient quality that they could be used in a courtroom reconstruction.

Date________________________Signed___________________________________

Checklist 5: Evidence Collector’s Checklist
Place a check mark by each of the following responsibilities as completed:

❑ I marked off the area around the victim and kept all unnecessary spectators out.
❑ I worked within the crime scene, wearing gloves to collect evidence.
❑ I walked an appropriate search pattern in the crime-scene area. The pattern walked was ________________________________.
❑ I properly handled and packaged all materials considered evidence into a bindle.
❑ I properly bindled and packaged all materials considered evidence into a bag or plastic bag and completed the Evidence Inventory Sheet for each evidence bag.
❑ I properly sealed and labeled all evidence containers.
❑ I wrote my signature across the seals on all evidence I collected.
❑ I completed the chain-of-custody information for each evidence bag.

Date________________________Signed___________________________________
Evidence

Case # _____________________  Inventory # ____________

Item #  Item description
_______  ________________________________
_______  ________________________________

Date of recovery __________  Time of recovery ________

Location of recovery ______________________________________

Recovered by _____________________________________________

Suspect _________________________________________________

Victim __________________________________________________

Type of offense __________________________________________

Chain of custody

Received from ____________  By ____________  Time _________ AM or PM
Date ________________  By ____________  Time _________ AM or PM

Received from ____________  By ____________  Time _________ AM or PM
Date ________________  By ____________  Time _________ AM or PM

Received from ____________  By ____________  Time _________ AM or PM
Date ________________  By ____________  Time _________ AM or PM