



Forensic Science CSI (Classroom Scene Investigations)



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Essential Question(s)

- What skill opportunities exist within the field of forensic science?

Summary

What do forensic scientists do? How do they develop their skills? In this series of activities, students will gain an understanding of the knowledge and abilities necessary for a career in forensic science. This resource will help students realize that forensic scientists have a variety of opportunities to work in different settings and many fields such as criminology, pathology, and archaeology. Students will learn that forensic scientists are investigative, detail-oriented problem-solvers who collect and analyze evidence, apply scientific knowledge, and use their expertise to help solve cases. After a series of hands-on activities, students will reflect on their experience and consider whether or not a career in this field is a possible fit for them.

Learning Goals

Standards

College and Career Preparation Standards 6–12 (6th -12th)

9.6 (S): Students will foster curiosity, inquisitiveness, wonder, and imagination by applying scientific reasoning and engineering practices to investigate, analyze, and explain phenomena in the natural and designed worlds, demonstrating an understanding of scientific relationships and patterns. (Clarification Statement: To achieve this standard, instruction should align to grade-level state standards for science and engineering.)

10.6 (S): Students will foster curiosity, inquisitiveness, wonder, and imagination by applying scientific reasoning and engineering practices to investigate, analyze, and explain phenomena in the natural and designed worlds, demonstrating an understanding of scientific relationships and patterns. (Clarification Statement: To achieve this standard, instruction should align to grade-level state standards for science and engineering.)

11.6 (S): Students will foster curiosity, inquisitiveness, wonder, and imagination by applying scientific reasoning and engineering practices to investigate, analyze, and explain phenomena in the natural and designed worlds, demonstrating an understanding of scientific relationships and patterns. (Clarification Statement: To achieve this standard, instruction should align to grade-level state standards for science and engineering.)

12.6 (S): Students will foster curiosity, inquisitiveness, wonder, and imagination by applying scientific reasoning and engineering practices to investigate, analyze, and explain phenomena in the natural and designed worlds, demonstrating an understanding of scientific relationships and patterns. (Clarification Statement: To achieve this standard, instruction should align to grade-level state standards for science and engineering.)

9.13.1: Students will join or initiate at least one school- or community-based organization aligned with their personal or social identities (e.g., cultural clubs, service groups), documenting how participation strengthens their sense of self and fosters connections with mentors and like-minded peers.

Attachments

- [3-2-1 Video—Forensic Science CSI.docx](#)
- [3-2-1 Video—Forensic Science CSI.pdf](#)
- [Activity Slides—Forensic Science CSI.pptx](#)
- [Career Reflection—Forensic Science CSI.docx](#)
- [Career Reflection—Forensic Science CSI.pdf](#)
- [DNA Isolation—Forensic Science CSI.docx](#)
- [DNA Isolation—Forensic Science CSI.pdf](#)
- [Fingerprinting—Forensic Science CSI.docx](#)
- [Fingerprinting—Forensic Science CSI.pdf](#)
- [Forensic Careers Card Sort Solution—Forensic Science CSI.docx](#)
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- [Forensic Careers Card Sort—Forensic Science CSI.docx](#)
- [Forensic Careers Card Sort—Forensic Science CSI.pdf](#)
- [Microscope Hair Analysis—Forensic Science CSI.docx](#)
- [Microscope Hair Analysis—Forensic Science CSI.pdf](#)
- [S-I-T—Forensic Science CSI.docx](#)
- [S-I-T—Forensic Science CSI.pdf](#)

Materials

- Activity Slides (attached)
- Chart paper (five sheets)
- Chart markers (five; one per sheet of chart paper)
- Laptops or iPads (one per student)

Activity 1

- S-I-T handout (attached; one per student)
- DNA Isolation handout (attached; one per student)
- Resealable quart-sized plastic bags
- Dish detergent (two tsp per student)
- Salt (one tsp per student)
- Water
- Coffee filter
- Plastic cups (two per student)
- Rubbing alcohol (1/2 cup per student; keep chilled until use to help with coagulation)
- Coffee stirrer, pipette, or inoculation loop (one per student)

Activity 2

- Fingerprinting handout (attached; one per student)
- Ink pads ([link](#); one per student)
- Plastic cups

Activity 3

- Microscope Hair Analysis handout (attached; one per student)
- Slides (one per student)
- Pipette (one per student)
- Coverslip (one per student)
- Compound microscope (one per two students)
- Water

Activity 4

- 3-2-1 Video handout (attached; optional; one per student)
- Forensic Careers Card Sort (attached; one per 2–4 students)
- Forensic Careers Card Sort Solution document (attached; one for teacher use)
- Career Reflection handout (attached; one half sheet per student)

Overview

Use the attached **Activity Slides** to guide this series of activities. Share the title of the activity with students using **slide 2**.

Display **slide 3** and discuss the Career Clusters with students. Ask students, “Do you enjoy working with your hands, thinking creatively, running tests, and solving problems?” Encourage students to respond by raising their hands, nodding, sharing out verbally, or another preferred method.

Inform students that if they enjoy using those skills, they might enjoy a career in public service and safety. Draw students’ attention to the “Public Service & Safety” cluster on the graphic. Tell students that professionals in this cluster do things like respond to crises, protect the community, and uphold the law. Elaborate further by telling students that settings these professionals work in may be government, legal systems, military, and laboratories to provide safety or solve mysteries. Tell students that forensic science careers are a rewarding group of careers in this cluster.



Display **slide 4** and provide the definition of *forensic science* from the American Academy of Forensic Science. Explain that a forensic science is any science used for the purposes of the law. Explain that jobs in forensic science can include crime scene investigators, DNA analysts, digital analysts, evidence technicians, forensic accountants, anthropologists, ballistics experts, and toxicologists. Tell students that the U.S. Bureau of Labor Statistics states that the average salary of a forensic scientist can be up to \$72,060 per year.

Display **slides 5-6** to go over the essential question and learning objectives.

Show **slide 7** and introduce the modified version of the [Four Corners](#) instructional strategy. Evenly divide students into the five designated spaces you created earlier labeled with the following skills:

- Observation
- Communication and Interpersonal Skills (interaction with others)
- Evidence Handling
- Data Collection and Analysis
- Teamwork

Explain that each skill is one that a forensic scientist must develop. Have students work together at their posters to generate three ideas of why that skill would be important in a forensic science profession. Then, have students select a spokesperson to share out the group's three ideas.

After each group has shared, display **slide 8**. Communicate any reasons as to why those skills may be important that students didn't address.

Move to **slide 9** and explain that if students are interested in a career in forensic science, there are a few steps they can take to familiarize themselves with the career while in middle school or high school. These steps include working hard in related school subjects like science and mathematics, especially chemistry and biology.

Explain that students may also consider looking into vocational school opportunities in the field while they are in high school, if opportunities are available. Some examples of these opportunities include:

- [UCO Forensic Science Summer Camp](#)
- [Oklahoma State Bureau of Investigation Forensic Science Center Tours](#)
- [Intro to Forensic Science Micro-Credential Course at UCO](#)
- [Oklahoma City National Memorial STEM Series](#)

Inform students that the next activities they participate in will simulate some day-to-day tasks forensic scientists complete.

Activity 1: DNA Isolation

Go to **slide 10** and give each student one copy of the attached **S-I-T** handout. Review the [S-I-T \(Surprising, Interesting, Troubling\)](#) strategy with students. Invite students to watch the next video and identify one surprising fact or idea, one interesting fact or idea, and one troubling fact or idea on the handout.

Move to **slide 11** and introduce the video [How to Properly Swab DNA Evidence at a Crime Scene](#) from the National Forensic Academy. Have students individually record surprising, interesting, and troubling facts or ideas on their handouts in the “DNA Isolation” row as they watch. Allow students approximately 10–15 minutes to record their responses.

Display **slide 12** and explain that *DNA isolation* is a procedure used by many scientists. Tell students that DNA isolation is the process of extracting DNA from an organism’s cells so it can be studied, analyzed, or used in experiments for comparison.

Display **slide 13** and inform students that they will be completing a simplified DNA extraction. Pass out one copy of the attached **DNA Isolation** handout to each student and review the steps of DNA isolation. Have students gather the materials you previously prepared in the quantities listed in the handout. When students are prepared, have them conduct the lab using the procedures listed in the handout.

After students complete the activity, engage them in a discussion using the questions on **slides 14–15**.

Optional DNA Extraction Activity

Consider allowing students extra practice with DNA extraction using this activity.

Unhide and display **slide 16**. Have students navigate to the [DNA Extraction](#) activity from the University of Utah using the link on the slide. You can also access the activity using the link in the slide notes. Inform students that this activity is a virtual simulation of DNA extraction in a science lab. Have students complete the activity according to the directions on the website.

Activity 2: Fingerprinting

Display **slide 17** and have students return to the S-I-T handout. Explain that they should now record one surprising, one interesting, and one troubling fact or idea in the “Fingerprinting” row as they watch the upcoming video. Move to **slide 18** and play the video [How to Process Latent Fingerprints Using Non-Magnetic Powder](#). Have students complete the section of their handouts as they follow along. Allow approximately 10–15 minutes for students to record their responses.

Display **slide 19** and share the importance of collecting fingerprints at a crime scene. Move to **slide 20** and introduce the different types of fingerprints an individual can have.

Give each student one copy of the **Fingerprinting** handout, an ink pad, and a cup of water. Display **slide 21**. Guide students to create an imprint of each of their fingers by showing them how to cover the top section of the finger in ink, place the finger at the outermost edge, roll it from one side to the other, and lift from the paper. Consider providing additional examples of how to create fingerprints as needed.

Have students work individually to create an imprint of each finger.

Optional Fingerprinting Guidance

Consider providing students with additional guidance on how to create an imprint of their fingers. Unhide and display **slide 22**. Play the video on the slide, [Fingerprinting Technique Using a 10 Print Card](#). Stop the video at the 1:10 minute mark.

After students make an imprint of each finger, have them analyze and identify which type of print each finger is.

Activity 3: Wet Mount

Go to **slide 23** and draw students' attention to the "Hair and Fiber" row of the S-I-T handout. If necessary, review the S-I-T strategy. Move to **slide 24** and play the video [How to Collect Hair and Fiber Evidence at a Crime Scene](#). As students watch, have them record one surprising fact or idea, one interesting fact or idea, and one troubling fact or idea in the corresponding row of the handout. Allow approximately 10–15 minutes for students to record their responses.

Display **slide 25** and introduce the importance of collecting cells, like those from hair, at crime scenes.

Organize students into groups of two and display **slide 26**. Give each student one copy of the attached **Microscope Hair Analysis** handout. Then, give each pair of students one slide, one cup of water, one pipette, and one coverslip.

Have students pluck one piece of hair from their partners. Then, have students create a wet mount. Have them add the hair on to the slide, add one drop of water on top of the hair, place the coverslip at a 45 degree angle over the hair, and drop the coverslip over the hair. Have students follow the directions on the handout to examine the hair sample on scanning, low, and high power with the microscope. As they observe the hair under each power, have them draw and describe their observations.

Activity 4: Career Focus

Optional Zoom Into Your Career Video

If time allows, consider showing students the video [Zoom Into Your Career - Caring for Communities with Caitlin Porterfield](#) on **slide 27**. Then, give each student one copy of the attached **3-2-1 Video** handout and have them respond to the prompts using the [3-2-1](#) strategy.

Display **slide 28** and have students use the shortened link to visit the [What is a Forensic Science?](#) page of the American Academy of Forensic Sciences' website. The webpage offers additional information about what a forensic scientist is, expectations, and scope of practices.

Show **slide 29** and organize students into groups of 2–4 students. Give each group one copy of the prepared **Forensic Careers Card Sort**. Tell students that they have multiple cards that they should organize into the following categories:

- Career title
- Required education level
- Years of education needed
- Salary range

Then, have students navigate to [My Next Move](#) using the QR codes or links on each of the career title cards to learn more about the individual careers in the field of forensic science. Have them read more about what each career does and what knowledge, skills, and abilities are needed in the field of forensic science.

Then, have students use the information from My Next Move to match the required education level, years of education needed, and salary range cards with the career title they correspond to. As each group finishes sorting, use the attached **Forensic Careers Card Sort Solution** document to check students' work. You can display the correct answers on **slide 30** or use the slide to check each group's work yourself.

Finally, move to **slide 31** and guide students to complete the career reflection activity as a whole class. Pass out one copy of the attached **Career Reflection** handout to each student.

Write the names of the careers students explored during the session on the board or other visible location. Then, inform students that they should choose the career that interests them the most from the options. Have them complete the handout by recording what the day-to-day job description is and describing what postsecondary education (certifications, degrees, etc.) options are available in their state relating to that career field. If students cannot find postsecondary options in their state, they should list options for a neighboring state.

Teacher's Note: Postsecondary Education Options

Students can find different postsecondary options to complete their Career Reflection handouts by visiting My Next Move. Have students navigate to the webpage for their chosen career, navigate to the "Education" section on the page, and select the "Find Training" option. Students should then be able to search using their zip code or state.

Share that there are other careers related to being a forensic scientist in addition to the careers discussed in this activity. Tell students that there are also other careers in Public Service & Safety Career Cluster that they can explore. Consider sharing the link to the [National Career Clusters Framework](#) or the [complete list of forensic science careers](#) from My Next Move if students would like to learn more.

Additional Forensic Activities

If students are interested in forensic science and want to extend their knowledge on DNA, consider ordering some of the following activities and kits from Flinn Scientific:

- [A Murder Mystery: DNA Fingerprinting](#)
- [Flinn Modeling, Inquiry and Analysis DNA Structure, Full-Size Lab Kit](#)
- [DNA Isolation—Super Value Laboratory Kit](#)
- [Flinn Scientific Fingerprinting—Super Value Activity-Station Kits](#)

Research Rationale

Research rationale for this resource is provided in the literature review [Career Exploration Through Experiential Learning - Forensics](#).

Resources

- American Academy of Forensic Sciences. (2025, October 10). *What is a forensic science?*. <https://www.aafs.org/careers-forensic-science/what-forensic-science>
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- Amazon. (n.d.). *CraftyManor mini 8 color pigment ink pads for stamps, fingerprint inkpads, stamp pad for scrapbook paper & wood & clothing & letter & archival* [Stamp pad]. <https://www.amazon.com/gp/aw/d/B0DC6C9L78>
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