

CRIME SCENE DO NOT CROSS

Catch a Killer
Hannah Steele
Grades 3-5
Completed 7/30/2020

CRIME SCENE DO NOT CROSS

Table of Contents

Page #	Content
---------------	----------------

3	Introduction
8	Goals & Outcomes
9	Assessment Plan
19	Lesson Plan 1
35	Lesson Plan 2
56	Lesson Plan 3
68	Lesson Plan 4
83	Unit References
84	Unit Resources

Introduction

Rationale

Forensic science is the use of scientific methods or expertise to investigate crimes or examine evidence that might be presented in a court of law. In this unit of study students will learn about what a forensic scientist is and what their work involves. Within this unit students will be exposed to many different skills. Some of the most prominent skills they will be exposed to are: observation, collaboration, asking questions, explaining, investigating, analyzing, maintaining dialogue, problem solving, thinking critically, and summarizing. If you look at these skills you will notice that they are some of the same skills forensic scientists need; which is the purpose of this unit. The skills that students will use in every lesson are: collaboration, explaining, analyzing, and problem solving. These skills are important because they are all skills that will be needed in the jobs of the future. We don't know what the jobs will look like, however we can guarantee that students will need to be able to collaborate well with others, explain how they think, be able to analyze how they look at a situation, and brainstorm to figure out how to solve a problem.

The four topics in this unit are: Working as a forensic scientist, how forensic scientists collaborate within the criminal justice system, how forensics scientists collaborate at a crime scene, and how forensic scientists work at a crime scene. Through this unit they will be able to see what investigation really looks like and how they can use investigative skills in their own life. The content is very engaging and will easily have students hooked from the beginning of the unit.

Students will be answering the following essential question throughout the unit, “How does investigation encourage collaboration?” These two concepts, investigation and collaboration are investigated in depth. However having students investigate these concepts can help them understand how they relate to the content of science. Students will look at the concept for each lesson and will have more opportunities to figure out how investigation and collaboration can be connected through learning. It is important for students to understand that investigating can happen inside a lab, but can also happen within the classroom. Ideally, I want the students to be able to see that investigation just isn’t for science. My hope is that students will also see how collaboration can be beneficial to their success. When students work by themselves they have to do all the work and all the thinking. However, when they collaborate they are able to bounce ideas off of each other. The connection of the concepts creates an essential understanding that students will see proven across disciplines and in real life.

Differentiation for Gifted Students

Gifted learners think and achieve in different ways. Within this unit there is differentiation in place to allow students to be successful learners. People think that just because someone is “gifted”, then they do not need assistance or help, however that is not true. Gifted students need to be stimulated with rich discussion and questions where it is not just a yes or no answer. In each lesson there is a vocabulary section where students will work together to figure out the definitions of content specific words. Each lesson also includes higher order thinking questions, which will allow the students to think more in depth about the concept. Lastly, students will also be problem solving. They will be given a task and they will have to work together in order to find a solution. The teacher will answer questions they ask, however the students are the ones

who will come up with the conclusions. With these aspects of differentiation in place I feel that you will be able to push your students to think more thoroughly about the concepts.

Dimensions & Features of Differentiation

There are different dimensions of differentiation, which include content, process, product, and learning environment. Differentiation of the content is where the students will receive materials that are on the same topic but have been differentiated in some format, whether it is reading level, vocabulary lists, or compacting the curriculum. Differentiation of the process is how you allow the student to learn, which can include: open ended questions, pacing of a unit, or freedom of choice. Differentiation of product is how the students are able to create their assignment, which could include: rubrics, demonstrating synthesis, or even have students self evaluate their work. The last differentiation dimension is the learning environment, which is how the students learn in the classroom. The classroom can be learner centered or teacher centered. It will depend on how the teacher teaches and what the students need in order to be successful.

Differentiation can also have different features such as: complexity, challenge, depth, creativity, and acceleration. Within this unit will you see complexity and depth of the concept through the content, questions, and materials they will be reading. Students will be challenged to investigate and think about topics that might not come naturally to them. They will also be asked to use their creativity in how to come up with solutions to the problem. Lastly students will be accelerated by using the content with this unit. The material takes a higher level of thinking which will have acceleration aspects. These are all aspects of differentiation that you want to consider when creating lessons for students. When you are able to add different features to your differentiation it gives the work a sense of purpose and the students will not feel like they are just completing

“busy work”. Differentiation is an important aspect of every unit and it is necessary in order to help make students feel comfortable and knowledgeable in their learning environment.

Goals & Outcomes

Unit Topic:	Crime Scene Investigation
Unit Concept:	Investigation
Essential Understanding:	Investigation Encourages Collaboration
CONTENT Goal and Objectives:	GOAL: to develop an understanding of what it takes to be a forensic scientist, knowledge of collaboration between people working on a case, and how investigation requires many different skills. OBJECTIVES: <i>The students will know that...</i> ● it takes many people in order to solve a case ● that not everything in forensics is a simple yes/no answer ● to understand what a forensic scientist does ● how forensics scientist work together with other people in the justice system
PROCESS Goal and Objectives:	GOAL: to develop investigation skills that will help them to solve a “murder” OBJECTIVES: <i>The students will be able to...</i> ● formulate questions about crime scenes and forensic scientists ● collaborate with others in order to solve a “murder” ● synthesize information from multiple different sources and teachings
CONCEPT Goal and Objectives:	GOAL: to understand the concept of investigation OBJECTIVES: <i>The students will understand that...</i> ● investigation encourages collaboration ● people working in the justice system must be able to communicate and collaborate in order to work together

effectively

Assessment Plan

Formative Assessment- Lesson One

For lesson one students are learning about what it is like working as a forensic scientist through a Bruner Model. After learning about what a forensic scientist does, the students will be placed into groups and as a team will create an oath for a forensic scientist. The oath should reflect what students have learned about being a forensic scientist. When creating the oath students will need to consider the following: Responsibilities and attributes of a forensic scientist, professionalism of a forensic scientist, behavior of forensic scientists while conducting research, obligations of a forensic scientist, investigating as a forensic scientist, and collaborating as a forensic scientist. After the groups have created their oaths they will present the oath to the class and each class member will complete a graphic organizer on each oath.

The following graphic organizer will be used:

Evaluate what level of critical thinking was used in each oath. Based on your evaluation, which oath reflects the most inclusive and accurate view of what a scientist does.

Rate each criteria by determining at which level the authors use each area of critical thinking and inquiry. Mark the box which best describes to what degree each criteria was evaluated.

Criteria	Identify	Explain	Apply	Analyze
Responsibilities and Attributes of a Forensic Scientist				
Professionalism of a Forensic Scientist				
Behavior of a Forensic Scientist				
Obligation of a Forensic Scientist				

Investigating as a Forensic Scientist				
Collaborating as a Forensic Scientist				
Choice of Oath:				
Justify your choice of an oath for a forensic scientist:				

Formative Assessment- Lesson Two

For lesson two students will be learning about how forensic scientists collaborate within the justice system through a Socratic Seminar. Students will be working in small groups of three to four students. They will choose one of the following assessments: creating a newspaper or creating a comic strip. For the newspaper the students will write about how crime scene investigations need people to collaborate in order to effectively solve a crime. If they choose the comic strip, the students will explain the benefits of collaborating. The teacher will use a rubric to grade their assessments.

Newspaper Rubric:

	Inadequate- 1 Point	Developing- 2 Points	Satisfactory- 3 Points
Collaboration & Communication	The student did not adequately work together in order to write the newspaper article.	The student collaborated with their team for the most part, but did not help the team in coming to a conclusion about what to write for the newspaper article.	The student was able to collaborate with their team in order to come to a conclusion about what to write for their newspaper article.
Content, Research, & Creativity	The newspaper shows little creativity and has less than 3 paragraphs of information that does not fully explain how collaboration is needed in order to solve a crime, The article was not factually accurate, nor compelling.	The newspaper shows some creativity and has at least 4 paragraphs of information in order to explain how collaboration is needed in order to solve a crime. The article is factually accurate, and compelling.	The newspaper shows creativity and has 5 or more paragraphs of information in order to explain how collaboration is needed in order to solve a crime. The article is factually accurate, and compelling.
Layout & Appearance	Newspaper article is disorganized. Photos are	Some organization to the newspaper organization.	Newspaper section is clearly organized. Photos

	missing or poor quality.	Photos are present, but they may not go with the article.	are present with captions and are of high quality.
Mechanics	More than 8 grammatical errors were made.	More than 5 grammatical errors were made.	No More than 4 grammatical errors.

Comic Book Rubric:

	Inadequate- 1 Point	Developing- 2 Points	Satisfactory- 3 Points
Collaboration & Communication	The student did not adequately work together in order to make the comic book strip.	The student collaborated with their team for the most part, but did not help the team in coming to a conclusion about how to make the comic book strip.	The student was able to collaborate with their team in order to come to a conclusion about what to make for their comic book strip.
Clarity & Neatness	Comic strip is hard to read and very few pictures and words are clearly written or drawn.	Comic strip is easy to read and most pictures and words are clearly written or drawn.	Comic strip is neatly drawn and all pictures and words are clearly written and drawn.
Required Elements	Comic strip has 2 or less of the required elements.	Comic strip has 3 out of 4 of the required elements.	Comic strip has all required elements, which are: At least 15 boxes of comics, must explain collaboration in comic strips, and have at least 10 sentences in the comic strip, and the comic strip is colored neatly.
Mechanics	More than 8 grammatical errors were made.	More than 5 grammatical errors were made.	No More than 4 grammatical errors.

Formative Assessment- Lesson Three

For lesson three students will be learning about how forensic scientists collaborate within the crime scene through a Hilda Taba model lesson. In their groups they started with, each group will create a statement which represents the relationship between the concept of “investigation” and the concept of “collaboration”. They will answer “What is seen between the relationship and

how does it help solve a crime?” After each group has come up with a generalization, they will present to the class. Each group will then defend their generalization. The whole class will listen to generalizations of each group, complete a graphic organizer about the generalizations in order to choose the generalization which most represents the relationship between “investigation” and “collaboration”. Whole group the class will vote on the best generalization.

Graphic Organizer:

Generalization	What does the generalization say about the two concepts?	How does the generalization connect investigation and collaboration?	What makes this generalization strong?
1.			
2.			
3.			
4.			
5.			
6.			

Rubric for Generalization Statement:

	Inadequate- 1 Point	Developing- 2 Points	Satisfactory- 3 Points
Collaboration & Communication	The student did not adequately work together in order to create a generalization.	The student collaborated with their team for the most part, but did not help the team in coming to conclusion of the murder.	The student was able to collaborate with their forensic team in order to come to a conclusion about the crime.
Content	The student did not adequately generalize the relationship between investigation and collaboration.	The student somewhat generalized the relationship between investigation and collaboration.	The student was able to adequately generalize the relationship between investigation and collaboration.

Presentation	The student did not present or the presentation was not completed.	The student presented their findings but did not explain how the evidence was linked to the suspect.	The student presented their findings from the crime scene and fully explained how the evidence was linked to the suspect.
---------------------	---	---	--

Formative Assessment- Lesson Four

For their final formative assessment students will be using all the skills they learned throughout the previous lessons in order to investigate and solve a “murder” through a creative problem solving lesson. This will be the performance task. For this assessment students will have to collaborate as scientists, collect clues, make inferences, investigate, and come to a conclusion about who the killer is. After each team has come to a conclusion they will present their findings to the class.

Task for Students:

Last night Durham County Police officers were called to the scene of a crime when a home was broken into and the resident of the house was murdered. By the time the police arrived the perpetrator had fled the scene. The back door to the house had a window in it, which was broken. The police believe this is where the burglar entered the house. The victim was found in his bedroom with a deep wound in his chest. There was no murder weapon found at the scene. After talking with neighbors, family, and friends the police were able to narrow the potential suspects down to 4. They want the murder solved quickly, which is why the Durham Chief of Police has called your team of scientists to do the job.

The chief of police wants you to investigate the crime scene with your most capable forensic scientists and investigators. The team has been asked to collect and examine evidence from the crime scene. The Chief of police has informed your team that you are able to interview the suspects and eyewitnesses to ask them any questions that may help you to solve the case quickly.

After you have solved the crime, you will present the case to the Chief of Police and other fellow investigators. You will need to present evidence from the crime scene, information you gained from the suspects, and explain how that information will get a guilty verdict in front of a judge. This is a very important case and the Chief of Police is counting on your team of investigators in order to solve the murder.

The police report is attached for your team to go over information that has already been collected by the police officers.

POLICE REPORT

The Victim

Name: Levi Gregg

Estimated Time of Death: between the hours of 6-9 pm on September 23rd

Place of Death: 1234 Hudson Ave Durham , NC

Levi Gregg was a loving husband and was married to Simone for 8 years. He was working as a CEO of Ping insurance until his untimely death. Levi worked long hours, but enjoyed his job. When he wasn't working he was seen spending time with his wife. He was found at 9:30 PM by the police officers on the night of September 23rd and an anonymous person called 911 to report the crime.

Suspects & Eye Witnesses

The Wife, 32

Name: Simone Gregg

Hair Color: brown

Height: 5'7

Simone Gregg has been married to Levi Gregg for 8 years. They met in college and were married after they graduated college. Simone says that they had their ups and downs, but were happy together. However, we know from another source that the couple is in marriage counseling. Simone explained that Levi worked a lot and that he had been having trouble at work recently with his boss. She said that the business was failing and that Charlie wanted to sell the business, but Levi wouldn't allow it. On the night in question Simone was at her friend Kima's house. Simone says she was there until 11 PM and never left Kima's house.

The Neighbor, 67

Name: Walter Bunk

Hair Color: Black

Height: 6'

Walter Bunk has lived in his current house of 1234 Hudson Ave for over 15 years and said that the Gregg's have lived in their current house for the past 4 years. Mr. Bunk claims that the couple always appeared friendly, however on many occasions he did hear yelling and arguing coming from the house. On the night in question, Mr. Bunk said that he was home all night with his wife and at around 7 PM he heard yelling coming from the house, but figured it was the couple having an argument again. However, he said he did see a figure running down the street after the yelling stopped.

The Friend, 36

Name: Kima George

Hair Color: Blonde

Height: 5'11

Kima George has been friends with Simone since highschool and friends with Levi since college. Kima has explained that once Simone and Levi started dating, they were inseparable. Kima said that Simone and Levi have the perfect life on the outside, but that they have their share of issues. Currently money had been tight for the couple, because Levi would keep spending it on anything that he wanted to get. Kima explains that they have been doing alot better since they have been going to marriage counseling and started addressing the money issues. On the night in question, Kima said that Simone was at her house and only left once for about 40 minutes to go get food, which she thinks was around 7 PM.

The Colleague, 43

Name: Charlie King

Hair Color: Black

Height: 5'9

Charlie King had been in business with Levi Gregg for the past 4 years, since the couple had moved to the town. Mr. Gregg was transferred from another office of Ping Insurance and took over the CEO position. Mr. King said that he and Levi got along well up until recently. The insurance company was losing business rapidly and Mr. King wanted to sell the business, however Levi did not. They were at odds during work and always ended up arguing about what they should do with the company. On the night in question Mr. King was eating at a restaurant with his girlfriend, however we have not been able to reach the girlfriend to corroborate his story.

Rubric for Task:

	Inadequate- 1 Point	Developing- 2 Points	Satisfactory- 3 Points
Collaboration & Communication (based on team rubric)	The student did not adequately work together in order to solve the crime.	The student collaborated with their team for the most part, but did not help the team in coming to conclusion of the murder.	The student was able to collaborate with their forensic team in order to come to a conclusion about the crime.
Questioning	The student was not able to come up with questions to ask the "suspects"	The student had questions, but they didn't necessarily relate back to the crime scene	The student had deep and thought provoking questions that related back to the evidence.
Evidence Collection	The student did not adequately collect evidence from the crime scene.	The student was able to collect some evidence and ask some questions about the	The student was able to collect evidence from the crime scene and ask

		crime.	questions pertaining to the crime scene.
Investigative Skills	The students' investigation skills do not show synthesis of how the evidence connected to the crime.	The students investigated the crime but were unable to fully synthesize how the suspect was guilty.	The student was able to investigate the crime with their team members and were able to synthesize the information found.
Presentation	The student did not present or the presentation was not completed.	The student presented their findings but did not explain how the evidence was linked to the suspect.	The student presented their findings from the crime scene and fully explained how the evidence was linked to the suspect.

Student Collaboration Survey (Each team member will do the survey on their team)

	Inadequate- 1 Points	Developing- 2 Point	Satisfactory- 3 Points
Focus on Task	Consistently stay focused on the task and what needs to be done. Other group members can count on this person.	Focuses on the task and what needs to be done most of the time. Other members sometimes need to remind this person to keep on task.	Rarely focuses on the task and what needs to be done. Lets others do the work.
Working with Others	Listens to, shares with, and supports the efforts of others. Tries to keep people working well together.	Usually listens to, shares with, and supports the efforts of others. Tries to not cause trouble within the group.	Rarely listens to, shares with, or supports the efforts of others. Often is not a good team player.

Creative Problem- Solving	Actively looks for and suggests solutions to problems.	Refines solutions suggested by other	Does not try to solve problems or help others solve problems. Lets others do the work.
Contribution	Routinely provides useful ideas when participating in a group. A strong group member who works hard.	Sometimes provides useful ideas when participating in the group. A good group member who does what is required.	Rarely provides useful ideas when participating in the group. May not participate.

Lesson Plans

Lesson One: Working as a Forensic Scientist Bruner Model

TEACHER NAME			Lesson #
Hannah Steele			1
MODEL	CONTENT AREA	GRADE LEVEL	
Bruner; Structure of the Discipline	Science	Fourth	
CONCEPTUAL LENS		LESSON TOPIC	
Investigation		Working as a Forensic Scientist	
LEARNING OBJECTIVES (from State/Local Curriculum)			
SCIENCE 4.L.1: Understand the effects of environmental changes, adaptations and behaviors that enable animals (including humans) to survive in changing habitats.			
ENGLISH LANGUAGE ARTS RI.4.1: Refer to details and examples in a text when explaining what the text says explicitly and when drawing inferences from the text.			
RI.4.3: Explain events, procedures, ideas, or concepts in a historical, scientific, or technical text, including what happened and why, based on specific information in the text.			
RI.4.7: Interpret information presented visually, orally, or quantitatively and explain how the information contributes to an understanding of the text in which it appears			
THE ESSENTIAL UNDERSTANDING (What is the overarching idea students will understand as a result of this lesson?)		THE ESSENTIAL QUESTION (What question will be asked to lead students to “uncover” the Essential Understanding)	
Investigation Encourages Collaboration		How does investigation encourage collaboration?	
CONTENT KNOWLEDGE (What factual information will students learn in this lesson?)		PROCESS SKILLS (What will students be able to do as a result of this lesson?)	
Students will know that: • Investigations can require inferencing • Questions drive the investigation • Collaborating with other scientists can lead to a solved case • Scientists are required to follow a rules of ethics • Scientists have attributes which allow them to perform their job (analytical skills, accuracy, communication skills, collaboration, personal ethics) • Scientists follow a certain process in order to collect/test evidence from a crime scene (1. Establish scene dimensions and identify safety hazards 2. Establish Security 3. Plan how you'll gather the evidence 4. Conduct a walkthrough of the scene 5. Document and process the scene 6. Conduct secondary review 7. Record and preserve		Students will be able to: • Observe • Collect, organize, and analyze evidence • Create inferences • Make predictions • Collaborate • Ask questions • Explain • Investigate • Analyze	

evidence 8. Test the evidence) ● Forensic Scientists use specific vocabulary that is related to their field of study ○ Forensics: scientific techniques used by scientists in order to help solve crimes. ○ Blood Spatter: The diameter and shape of a blood pattern, which reflects the trajectory of blood when skin is broken in relation to a homicide or violent death. ○ DNA: Stands for Deoxyribonucleic Acid. It is a molecule that holds genetic information, such as hair color, eye color, and other human characteristics. ○ Analysis: To study or determine the nature or relationship of the parts of something. ○ Suspect: A person that may be guilty of a crime. ○ Crime Scene: The place where a crime was committed.		
GUIDING QUESTIONS <i>What questions will be asked to support instruction?</i> Include both “lesson plan level” questions as well as questions designed to guide students to the essential understanding		
Pre-Lesson Questions: ● What is a scientist? ● What is collaboration? ● How can a scientist and collaboration be related? ● How are the people collaborating in these photos? ● Why do you think the people are investigating? ● What do you find surprising about the slides? ● What is a forensic scientist? ● What skills does a forensic scientist need? ● How does a forensic scientist use collaboration skills? ● How are forensic scientists different from police officers?	During Lesson Questions: ● What can you infer from the evidence? ● What can you predict based on the evidence you looked at? ● Based on your investigation, what evidence can you provide to prove your prediction? ● Based on the evidence, who do you believe is guilty? ● What evidence stood out? ● When examining the evidence was it	Post Lesson Questions: ● What did you consider as you wrote your oath? ● Why do you think professionals write oaths? ● What are the attributes of an oath? ● How did you use collaboration in order to write your oath? ● How did you choose what to include in your oath? ● How is investigating and writing an oath similar? ● How does investigation encourage collaboration?

• What are some ethical codes that a forensic scientist needs to have? • How can collaboration be seen in a forensic scientists job? • How is investigation seen in a forensic scientist job? • What can we add to our list after watching the video? • How do you become a Forensic Scientist? • What traits does a forensic scientist need in order to work in a lab? • What does a forensic scientist need in order to collaborate with others? • What type of schooling do you need in order to become a forensics scientist? • What personal traits do you need in order to be an effective forensics scientist? Why? • If you were a forensic scientist, what specialization would you want to have? Why? • What can we add to our list after watching the video? • What does a forensic scientist do? • What can we add to our list after watching the video? • What kind of tools do forensic scientists use? • Why do forensic scientists need schooling? • What has surprised you about the job of a forensic scientist? • How do forensic scientists help our justice system? • As a forensic scientist, what might your beliefs be about science? • What characteristics or attributes would a forensic scientist need?	difficult? • What do you think would be difficult about a forensic scientists job? • Why is it important to have a strong moral code? • What did you learn about investigation? • Why is the investigating process important? • Why is investigating a powerful tool? • What did you infer from the evidence you were given? • What were the inferences based upon? • What did you learn about collaboration? • Why is collaboration important? • Why is collaboration an important aspect of an investigation? • How are investigations and collaborations connected? • How does investigation impact collaboration? • How does collaboration impact investigation? • How does investigation encourage collaboration? •	
---	---	--

What ethical issues might a forensic scientist have to think about?		
DIFFERENTIATION <i>(Describe how the planned learning experience has been modified to meet the needs of gifted learners. Note: Modifications may be in one or more of the areas below. Only provide details for the area(s) that have been differentiated for this lesson.</i>		
Content	Process	Product
Vocabulary is content specific and technical for this grade level.	The use of Bruner's Structure of the Discipline represents high levels of thinking, inferencing, and questioning	
		Learning Environment

PLANNED LEARNING EXPERIENCES

(What will the teacher input? What will the students be asked to do? For clarity, please provide detailed instructions)

Engage and Connect - *This phase focuses on piquing students' interest and helping them access prior knowledge. This is the introduction to the lesson that motivates or hooks the students.*

The teacher is dressed like a forensic scientist: dark blue shirt, dark blue pants, flashlight, etc. As students are entering the room, there will be a slide show looping. Students will observe the slide show.

Teacher asks Pre-Lesson Questions:

- What is a scientist?
- What is collaboration?
- How can a scientist and collaboration related?
- How are the people collaborating in these photos?
- Why do you think the people are investigating?
- What do you find surprising about the slides?

The students will then play a pear deck vocabulary card game. Students will look at the definition and come up with an example and also a picture to go with the word.

<https://app.peardeck.com/vocab/editor/?fileId=15mQqnz4A0SiCPkwKelk28IsKxe1cJR8R>

The teacher will ask:

- **What is a forensic scientist?**

Explore - *In this phase, the students have experiences with the concepts and ideas of the lesson.*

Students are encouraged to work together without direct instruction from the teacher. The teacher acts as a facilitator. Students observe, question, and investigate the concepts to develop fundamental awareness of the nature of the materials and ideas.

I. FAMILIARITY WITH THE DISCIPLINE

Students will share words/phrases that define "what a forensic scientist" does. The teacher will call on students and record the responses on the board. Once the conversation has been exhausted the students will watch the following video. <https://youtu.be/qESpv6bqBuU>

After watching the video the teacher will ask the students if there is anything else that we can add to our list. Once students get stuck, the teacher will ask the following prompting questions:

- What skills does a forensic scientist need?
- How does a forensic scientist use collaboration skills?
- How are forensic scientist different from police officers?
- What are some ethical codes that a forensic scientist needs to have?
- How can collaboration been seen in a forensic scientists job?
- How is investigation seen in a forensic scientist job?

- What can we add to our list after watching the video?

- **How do you become a Forensic Scientist?**

Students will watch a second video about how to become a forensic scientist.

<https://youtu.be/uOV0spSo0BI> Students will continue to share words/ phrases and the teacher will record them to their class list. Once students get stuck, the teacher will ask the following prompting questions:

- What traits does a forensic scientist need in order to work in a lab?
- What does a forensic scientist need in order to collaborate with others?
- What type of schooling do you need in order to become a forensics scientist?
- What personal traits do you need in order to be an effective forensics scientist? Why?
- If you were a forensic scientist, what specialization would you want to have? Why?
- What can we add to our list after watching the video?

- **What does a forensic scientist do?**

The students will watch one more video. <https://youtu.be/XGlg0NCz9Ow> The teacher will continue to record responses. After Students have watched the video(s), the teacher will ask the following questions:

- What can we add to our list after watching the video?
- What kind of tools do forensic scientists use?
- Why do forensic scientists need schooling?
- What has surprised you about the job of a forensic scientist?
- How do forensic scientist help our justice system?
- As a forensic scientist, what might your beliefs be about science?
- What characteristics or attributes would a forensic scientist need?
- What ethical issues might a forensic scientist have to think about?

Facet: Explain- Students will use prior knowledge and knowledge gained from discussions and videos in order to contribute to the list on the board.

II.PRACTICING THE DISCIPLINE

The teacher has set up 4 different stations around the room prior to the beginning of the lesson. The stations represent different types of forensic evidence that can be found at a crime scene. The evidence from the scene of the crime has already been found. They will be given 3 suspects and looking at the evidence they will have to determine who committed the crime.

At each station is a different type of forensic evidence, the four stations will include:

- **Footprint Analysis** (They will measure the foot to figure out the height of the culprit)
- **Hair Analysis** (They will look at different hair to determine which is a match to the one from the scene of the crime)
- **Blood Spatter Analysis** (They will look at the blood spatter from different objects and determine which weapon was used at the crime)
- **Fingerprint Analysis** (The students will look at the suspects fingerprints and compare it to the one found at the crime scene.)

Students will make inferences about their evidence and collaborate with their fellow scientists on who committed the crime.

The teacher will divide the class up into groups of four. Students will be provided with a field guide notebook, pencil, safety glasses, magnifying glass, tweezers, and a flashlight. The teacher will provide the following expectations for the activity:

- Groups rotate through the four stations.
- Groups will go to a different station each round.
- Students are not allowed to talk to one another when observing the evidence.
- Students may pick up the evidence for closer inspection of the evidence.
- Students will record only what they observe (see), they will not make inferences or predictions at this time.
- Students will return to their groups.
- In their groups students will each take turns to share what they observed, after everyone has shared, students may take turns to start sharing their inference/predictions about the evidence. They will record their inferences/predictions in their field notes. They have 3 suspects and are trying to figure out which person is guilty. Students must come to a consensus on their predictions about who they believe is guilty. They will be answering the following questions:
 - What can you infer from the evidence?
 - What can you predict based on the evidence you looked at?
 - Based on your investigation, what evidence can you provide to prove your prediction?
 - Based on the evidence, who do you believe is guilty?
 - What evidence stood out?
 - When examining the evidence what was difficult?
 - What do you think would be difficult about a forensic scientists job?
 - Why is it important to have a strong moral code?

Groups will go to each station for 5-8 minutes with no conversation. Students will then meet in groups between each rotation to collaborate on the questions above for 6-10 minutes. The teacher will call time for each rotation and collaboration. Each group will also have a chart paper so that they will be able to show their evidence of their investigation.

Facet: Explain- Students will go through the centers and look at the evidence provided in order to explain who the guilty person is.

Facet: Apply- Students have just went over what forensic scientists are, what they do, and how you become one, now students will use this knowledge in order to help them solve the crime.

Facet: Interpret- Students will look at the evidence given in order to figure out who the guilty suspect is.

Explain - *Students communicate what they have learned so far and figure out what it means. This phase also provides an opportunity for teachers to directly introduce a concept, process, or skill to guide students toward a deeper understanding.*

III. REFLECTING ON THE DISCIPLINE

After all the groups have rotated through their stations and held their debriefing meetings, each group will present their findings on the chart paper they were given. Each group will need to present whom they think is the guilty person and what evidence they have in order to prove it. Each poster will be presented. Students will do a gallery walk of the posters. Students will stay in their groups, but make comments on post-it notes independently on each poster. Students will then return to their seats for debriefing.

Facet: Explain- Students will explain to the class how their evidence proves said person is guilty.

The teacher will ask the following questions:

- What did you learn about investigation?
- Why is the investigating process important?
- Why is investigating a powerful tool?

- What did you infer from the evidence you were given?
- What were the inferences based upon?
- What did you learn about collaboration?
- Why is collaboration important?
- Why is collaboration an important aspect of an investigation?
- How are investigations and collaborations connected?
- How does investigation impact collaboration?
- How does collaboration impact investigation?
- How does investigation encourage collaboration?

Elaborate —*Allow students to use their new knowledge and continue to explore its implications. At this stage students expand on the concepts they have learned, make connections to other related concepts, and apply their understandings to the world around them in new ways*

III. CONTINUED PRACTICE AND REFLECTION

Students will be regrouped into groups of 3. In their new small groups, students will be instructed to create an oath for a forensic scientist and record their oath on chart paper. The oath should reflect what students have learned about being a forensic scientist. When creating the oath students will need to consider the following:

- Responsibilities and attributes of a forensic scientist
- Professionalism of a forensic scientist
- Behavior of forensic scientists while conducting research
- Obligations of a forensic scientist

Each group will post their oaths and present their oaths to the class. Class members will complete a graphic organizer on each oath.

Facet: Self-Knowledge- Students will need to think about what it takes in order to be a forensic scientist, and figure what are the most characteristics to have.

Evaluate: *This phase assesses both learning and teaching and can use a wide variety of informal and formal assessment strategies.*

After each group presents their oaths, students will complete their rubrics.

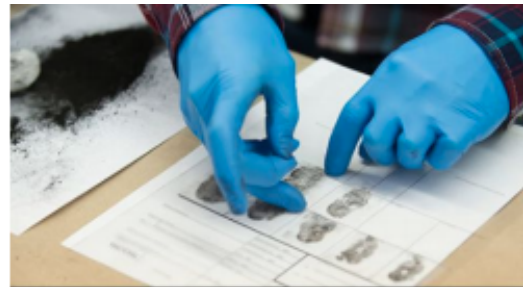
The teacher will ask the following post-lesson questions:

- What did you consider as you wrote your oath?
- Why do you think professionals write oaths?
- What are the attributes of an oath?
- How did you use collaboration in order to write your oath?
- How did you choose what to include in your oath?
- How is investigating and writing an oath similar?
- How does investigation encourage collaboration?

Each student will complete a graphic organizer for each oath individually. Each student will nominate the oath that they believe best embodies the beliefs of a forensic scientist. Each student will justify his or her answer.

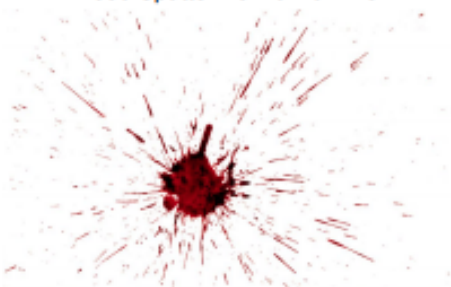
ENGAGE & CONNECT- slides that will be looping as students walk into the classroom.





EXPLORE- centers the students will be doing

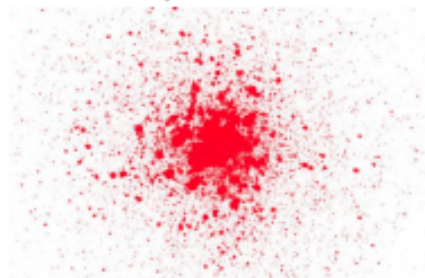
Blood Spatter from a Hammer



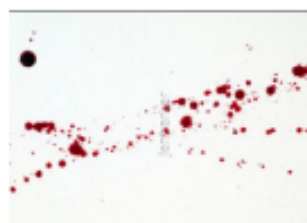
Blood Spatter from Knife



Blood Spatter from Gunshot



Blood Sample From the House



Finding Height from a Footprint

In order to find the height of the suspect by looking at the shoeprint, you must do the following:

1. Measure the length of the shoeprint
2. Multiply that number by 100
3. Then divide the previous answer by 15



Arches: These occur in about 5% of the encountered fingerprints. The ridges of the finger run continuously from one side of the finger to the other and make no backward turn. Normally, there is no delta in an arch pattern but if it exists, there must be no re-curling ridge that intervenes between the core and delta points.



Plain Arch

It starts on one side of the finger and the ridge then slightly cascades upward.



Tented Arch

The tented arch lies in the ridges in the centre and is not continuous like the plain arch.

Loops: These can be seen in almost 60 to 70% of the fingerprints that are encountered. The ridges make a backward turn in loops but they do not twist. This backward turn or loop is distinguished by how the loop flows on the hand and not by how the loop flows on the card where the imprint is taken. This imprint on the fingerprint is similar to the reverse image that we see when we look at ourselves in the mirror. A loop pattern has only one delta.



Ulnar Loop

These loops are not very common and most of the times will be found on the index fingers.



Double Loop

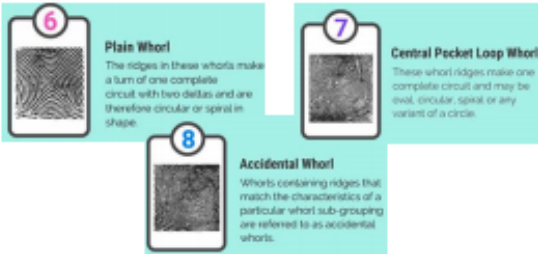
It has two distinct and separate shoulders for each core, two deltas and one or more ridges that make a complete circuit.



Radial Loop

The flow of this pattern runs from the thumb towards the little finger of the hand.

Whorls: These can be found in about 25 to 35% of the fingerprints that are encountered. Some of the ridges in a whorl make a turn through at least one circuit. Therefore any pattern that contains two or more deltas will be a whorl.



Fingerprints of Suspects



Fingerprint from the House



Papers for Hair Analysis Center

Will place a piece of hair that is the sample from the home. Along with the samples from the three suspects.

The Crime

Mrs. Kelley found her husband murdered in their house early one morning with a deep puncture wound. She quickly called 911 in order for the police to look at the scene of the crime. There did not appear to be a forced entry into the home. There was no weapon found and only one witness of the crime. However through investigation of the witness, friends, and family, the detectives were able to narrow the case down to 3 key suspects. A businessman (Mr. Jones), his wife (Mrs. Kelley), or his best friend (Mr. Kern). The forensic scientists have collected the data from the crime scene. The scientists need your help comparing the data collected at the crime scene to the 3 suspects in order to figure out who committed the crime. You must figure out who committed the crime and with what weapon.

ELABORATE- graphic organizer for oath

Evaluate what level of critical thinking was used in each oath. Based on your evaluation, which oath reflects the most inclusive and accurate view of what a scientist does.

Rate each criteria by determining at which level the authors use each area of critical thinking and inquiry. Mark the box which best describes to what degree each criteria was evaluated.

Criteria	Identify	Explain	Apply	Analyze
Responsibilities and Attributes of a Forensic Scientist				
Professionalism of a Forensic Scientist				
Behavior of a Forensic Scientist				
Obligation of a Forensic Scientist				
Investigating as a Forensic Scientist				
Collaborating as a Forensic Scientist				
Choice of Oath:				
Justify your choice of an oath for a forensic scientist:				

Lesson Two:
Collaboration within the Justice
System
Socratic Seminar Model

TEACHER NAME		Lesson #
Hannah Steele		2
MODEL	CONTENT AREA	GRADE LEVEL
Socratic Seminar Model	ELA	4
CONCEPTUAL LENS		LESSON TOPIC
Investigation		Collaboration within the Justice System
LEARNING OBJECTIVES <i>(from State/Local Curriculum)</i>		
- Refer to details and examples in a text when explaining what the text says explicitly and when drawing inferences from the text. - Explain events, procedures, ideas, or concepts in a text, including what happened and why, based on specific information in the text. - Interpret information presented visually, orally, or quantitatively and explain how the information contributes to an understanding of the text in which it appears. - Explain how an author uses reasons and evidence to support particular points in a text.		
THE ESSENTIAL UNDERSTANDING <i>(What is the overarching idea students will understand as a result of this lesson?)</i>		THE ESSENTIAL QUESTION <i>(What question will be asked to lead students to “uncover” the Essential Understanding)</i>
<i>Investigation Encourage Collaboration</i>		<i>How does investigation encourage collaboration?</i>
CONTENT KNOWLEDGE <i>(What factual information will students learn in this lesson?)</i>		PROCESS SKILLS <i>(What will students be able to do as a result of this lesson?)</i>
Students will know.... - That investigation encourages collaboration - That it takes a team to solve a case. - That a people in the justice system must be able to communicate and collaborate with their team - Vocabulary that is specific to lesson: Swabbed : A method of collecting DNA whether it is blood, sweat, etc. Crime Scene: A place where an offense has been committed and forensic evidence may be gathered. Forensic Scientist: Someone who looks at scientific principles and techniques in order for criminal justice. Physical Evidence: objects that are found at a crime scene, such as fingerprints, footprints, etc. Trace Evidence: this is evidence that is transferred from one person to another, or one place to another.		Students will be able to.... - Collaborate - Ask questions - Explain - Analyze - Maintain dialogue - Compare and Contrast - Problem Solve - Discuss - Think critically

○ Gunshot Residue: Often abbreviated as GSR, this is the material that is found on hands or clothing of someone who has discharged a firearm. ○ Perpetrator: the person who is believed to have committed the crime. ○ Luminol: is a chemical, forensic scientists use it to detect trace amounts of blood at crime scenes. ● Students will know that collaboration happens within police/forensic science work. ● Students will know that not everything the CSI or forensic scientist do is a simple yes/no answer	
GUIDING QUESTIONS <i>What questions will be asked to support instruction?</i> <i>Include both “lesson plan level” questions as well as questions designed to guide students to the essential understanding</i>	
Pre-Lesson Questions: ● What questions did you have while you were watching the videos? ● What have you learned about real life crime scenes? ● What have you learned about crime scenes on tv? ● How do crime scenes on TV compare with crime scenes in real life? ● How do the crime scene investigators collaborate with other people during an investigation? ● Based on the video, what skills do you need in order to solve a crime? ● What does investigation mean when you look at it through the lens of crime scenes? ● Why is it important to know how a crime scene investigation works? ● What investigative skills would help you to be a good forensic scientist? ● Who is involved in investigating a crime? Why? ● What is something new that	During Lesson Questions: ● What did you underline in the text? Why did you underline that word or phrase? ● What questions do you have as a result of reading this text? ● How does reading this text bring up a memory or experience you have gone through? ● How can this information be used? ● Who would be interested in this information? ● How would you summarize the information? Questions the teacher may ask during the seminar: ● How does investigation encourage collaboration? ● How can collaboration and investigation be connected? ● Why does investigation encourage collaboration?
	Post Lesson Questions: ● What was the theme or “big idea” that you discovered during this seminar? ● What led you to that belief? ● What concepts did you explore during this seminar? ● What impact does investigation have on collaboration? ● How was your understanding of investigation deepened due to this seminar? ● How was your understanding of collaboration deepened due to this seminar? ● What was challenging for you during this seminar? ● What role did you like the most during this seminar? ● What did the initial question assume? ● What new perspective do you now have about investigation? ● Why does it matter that forensic scientists are able to investigate and collaborate?

you learned from the video?		● In today’s world why is it important to be able to collaborate? ● How was the theme of investigation related to collaboration? ● How would other groups/types of people respond? Why? What would influence them? ● How can you logically explain how you go from investigation to collaboration? ● Why does it matter that people collaborate during investigations? ● What evidence do you have that the investigation encourages collaboration? ● How are you able to interpret the information differently than from the beginning of the lesson?	
DIFFERENTIATION <i>(Describe how the planned learning experience has been modified to meet the needs of gifted learners. Note: Modifications may be in one or more of the areas below. Only provide details for the area(s) that have been differentiated for this lesson.</i>			
Content	Process	Product	Learning Environment
The content for this lesson uses above grade level material, therefore the material will be more challenging.	Students will be participating in the Socratic Seminar. Students will also create questions that are open-ended and thought provoking.		Students will work in different environments during this lesson: independently, in small groups, and socratic seminar.

PLANNED LEARNING EXPERIENCES

(What will the teacher input? What will the students be asked to do? For clarity, please provide detailed instructions)

Engage and Connect - *This phase focuses on piquing students' interest and helping them access prior knowledge. This is the introduction to the lesson that motivates or hooks the students.*

Students will watch the following video <https://youtu.be/xJcNa2-jprs> from (1:47-6:50). While students are watching the video, they will be answering the following questions:

- What questions did you have while you were watching the videos?
- What have you learned about real life crime scenes?
- What have you learned about crime scenes on tv?
- How do crime scenes on TV compare with crime scenes in real life?
- How do the crime scene investigators collaborate with other people during an investigation?

Once the video is finished, students will finish responding on their paper (attached to lesson plan), then students will orally share their answers to the questions.

Then, the teacher will ask questions to get students thinking more about the video and ready for the article they will be reading. Each question will be put onto an anchor chart and a student will record the student responses.

- Based on the video, what skills do you need in order to solve a crime?
- What does investigation mean when you look at it through the lens of crime scenes?
- Why is it important to know how a crime scene investigation works?
- What investigative skills would help you to be a good forensic scientist?
- Who is involved in investigating a crime? Why?
- What is something new that you learned from the video?

There will be new vocabulary for students to learn during this lesson. The teacher will split students up into 2 teams. One student from each team will come to the board. I will discreetly tell the students at the board which word they are drawing. Their team's job is to figure out what vocabulary word their teammate is drawing, the team that guesses first wins that round. Give each round an allotted amount of time. Repeat with different team members coming to the board until all the vocabulary words have been drawn, tally the points, and declare a winning team.

Explore - *In this phase, the students have experiences with the concepts and ideas of the lesson. Students are encouraged to work together without direct instruction from the teacher. The teacher acts as a facilitator. Students observe, question, and investigate the concepts to develop fundamental awareness of the nature of the materials and ideas.*

The teacher will model the close reading strategies using the article, "How Crime Scene Investigation Works" by Julia Layton (Only page 1) <https://science.howstuffworks.com/csi.htm>

During a close read, students are instructed to read the article 3 times; once for familiarity, once for content, and once for "pulling it all together". Students will take notes in the margins to ask questions and write down their thoughts they have about the article. Students will also underline or highlight words and/or phrases that they find important. They will also underline or highlight words/phrases that they have questions about. (Students will be using the facet of applying, , when they underline the information they deem important they are applying what we previously knew about investigations and how the new information connects.)

The teacher will provide time for students to employ the close reading strategies. Then the teacher will ask the following questions:

- What did you underline in the text? Why did you underline that word or phrase?
- What questions do you have as a result of reading this text?
- What memories or experiences are brought to your mind while reading this article?
- How can this information be used?
- Who would be interested in this information?
- How would you summarize the information?

Explain - *Students communicate what they have learned so far and figure out what it means. This phase also provides an opportunity for teachers to directly introduce a concept, process, or skill to guide students toward a deeper understanding.*

Students will each be provided 3 copies of “How Crime Scene Investigation Works: Evidence Collection” by Julia Layton (Only Page 5) <https://science.howstuffworks.com/csi.htm>. Students will be divided into groups of three or four. Each group will be expected to read the article three times. Each time focusing on a different aspect. (familiarity, content, and pulling it all together) While the students are reading the article they will be expected to use the close reading strategies.

Once everyone has read the article three times, they will look at their notes and come up with 6 questions as a result of the close reading. The questions created should represent high levels of thinking and be open-ended. These questions along with the notes from their close readings will be used during the socratic seminar. Students will write their notes on page 6 in the socratic materials--linked below)

Materials for Socratic Seminar: (will be using page 5, 6 for students to write down their open-ended questions about the article)

<https://pms.pasco.k12.fl.us/wp-content/uploads/pms/2014/08/Socratic-Seminar.pdf>

Elaborate —*Allow students to use their new knowledge and continue to explore its implications. At this stage students expand on the concepts they have learned, make connections to other related concepts, and apply their understandings to the world around them in new ways*

Students will now be divided into two groups. One group will make up the inner circle of the Socratic Seminar and one group will form the outer circle of the Socratic Seminar. The inner circle group will start the discussion when a student or the teacher asks the opening question. The students on the outer circle will be taking notes about the discussion and create questions they have about the discussion. Each student will be assigned a partner and they will be observing how their partner participates when it is their group’s turn to talk. Students will be provided an observation sheet to take notes on their partner’s participation. (page is linked below) The leader, which will be designated by the teacher, will begin the Socratic Seminar with an open-ended, thought-provoking question. Students on the inner circle will respond first and continue the discussion. The inner and outer circles will change positions halfway through the seminar. Students will be expected to follow the expectations for participation which are attached to the plan. The participation will be discussed before starting the seminar.

Materials for Socratic Seminar: (will be using page 10 for students to record how often their partner contributed during the socratic seminar)

<https://pms.pasco.k12.fl.us/wp-content/uploads/pms/2014/08/Socratic-Seminar.pdf>

Opening questions might include: (If the designated leader does not have an opening question, these can be used. These questions can also be inserted into the discussion by the facilitator if discussion during the seminar falters.)

- How does investigation encourage collaboration?
- How can collaboration and investigation be connected?
- Why does investigation encourage collaboration?

Students will discuss for 10 minutes, time can be longer depending on the age and attention span of students. After 10 minutes, then the inner and outer circles will switch places. The new outer circle members will now be taking notes of their partner, while the inner circle will start up a discussion. (students will be using the facet explain/Have perspective during the seminar, because they will need to justify their response to the seminar using prior knowledge and what they have just read in the articles. They will also hear differing points of views on the concept of investigation.)

Once students have completed the Socratic Seminar, the teacher will ask the following questions:

- What was the theme or “big idea” that you discovered during this seminar?
- What led you to that belief?
- What concepts did you explore during this seminar?
- What impact does investigation have on collaboration?
- How was your understanding of investigation deepened due to this seminar?
- How was your understanding of collaboration deepened due to this seminar?
- What was challenging for you during this seminar?
- What role did you like the most during this seminar?
- What did the initial question assume?
- What new perspective do you now have about investigation? Collaboration?
- Why does it matter that forensic scientists are able to investigate and collaborate?
- In today’s world why is it important to be able to collaborate?

Then students will answer the following questions in the Socratic Seminar Debrief using complete sentences. Their final question will be “How does investigation encourage collaboration?” Students may use what we talked about during the socratic or evidence from the text to support their answer. (The page is attached.)

After the groups have completed their seminar reflection, the teacher will ask the following questions:

- How was the theme of investigation related to collaboration?
- How would other groups/types of people respond? Why? What would influence them?
- How can you logically explain how you go from investigation to collaboration?
- Why does it matter that people collaborate during investigations?
- What evidence do you have that the investigation encourages collaboration?
- How are you able to interpret the information differently than from the beginning of the lesson?

Students will respond to the questions orally, then, students will be instructed to return to their small groups.

Evaluate: *This phase assesses both learning and teaching and can use a wide variety of informal and formal assessment strategies.*

Students will work in their original small groups of three to four students. They will debrief with the 5 questions from their close reading. Students will research, collect, organize, and analyze data which will allow them to : Create a newspaper article about how crime scene investigation needs people to collaborate in order to more effectively solve a crime. (Students will be able to explain facet: interpret)

OR

Create a comic strip about how investigation benefits from collaboration. (Students will be able to explain facet: interpret)

**Rubrics are attached for evaluation section

PAGE FOR ENGAGE AND CONNECT

QUESTION	RESPONSE	JUSTIFICATION
What questions did you have while you were watching the videos?		
What have you learned about real life crime scenes and those that are seen on tv?		
How do csi collaborate with other people during an investigation?		
How is collaboration used during a case?		

Settle Back and Read



- Circle words you do not know
- Underline or highlight sentences or phrases that seem important
- Summarize ideas in the margins, and
- Write open-ended questions in the margins that pique your curiosity.

PAGES THAT WILL BE USED FOR SOCRATIC SEMINAR

AVID Socratic Seminar Questions

Opening Questions (Level 1)	Core Questions (Level 2)	Closing (Level 3)
• Relates to text • Uses concrete examples • Open-ended • Is not a yes or no question	• Develops theme • Leads into the abstract • Leads to further questions	• Relates to self • Relates to reality
EXAMPLES • What does the author mean when he says... "with torn and bleeding hearts we smile?" • When do you wear a mask? • When do masks "grin and lie?" • What would make the author say "But let the world dream otherwise."	EXAMPLES • Is there a time when we can see below the mask people wear? • What is the purpose of wearing a mask? • What is your response to people who wear masks? • Can masks belie the wearer?	EXAMPLES • What do you think was the wisdom that the author was trying to impart to you? • What in your thinking has changed about the way you treat people who wear masks?

AVID Socratic Seminar Questions

Name: _____ Title of Seminar: _____ Date: _____

	Opening Questions (Level 1)	Core Questions (Level 2)	Closing Questions (Level 3)
1			
2			
3			
4			
5			

Reflections: _____

Observation Form
Inner-Outer Discussion Circle

Your Name:	Partner:																		
DIRECTIONS: Each time your partner does one of the following, put a check in the box.																			
SPEAKS IN THE DISCUSSION:																			
☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
LOOKS AT THE PERSON WHO IS SPEAKING:																			
☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
REFERS TO THE TEXT:																			
☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
ASKS A QUESTION:																			
☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
RESPONDS TO ANOTHER SPEAKER:																			
☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
INTERRUPTS ANOTHER SPEAKER:																			
☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
ENGAGES IN SIDE CONVERSATION:																			
☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
AFTER DISCUSSION: What is the most interesting thing you partner said?																			
AFTER DISCUSSION: What would you like to have said in the discussion?																			

RUBRICS FOR EVALUATION SECTION

Newspaper Rubric:

	Inadequate- 1 Point	Developing- 2 Points	Satisfactory- 3 Points
Collaboration & Communication	The student did not adequately work together in order to write the newspaper article.	The student collaborated with their team for the most part, but did not help the team in coming to a conclusion about what to write for the newspaper article.	The student was able to collaborate with their team in order to come to a conclusion about what to write for their newspaper article.
Content, Research, & Creativity	The newspaper shows little creativity and has less than 3 paragraphs of information that does not fully explain how collaboration is needed in order to solve a crime. The article was not factually accurate, nor compelling.	The newspaper shows some creativity and has at least 4 paragraphs of information in order to explain how collaboration is needed in order to solve a crime. The article is factually accurate, and compelling.	The newspaper shows creativity and has 5 or more paragraphs of information in order to explain how collaboration is needed in order to solve a crime. The article is factually accurate, and compelling.
Layout & Appearance	Newspaper article is disorganized. Photos are missing or poor quality.	Some organization to the newspaper organization. Photos are present, but they may not go with the article.	Newspaper section is clearly organized. Photos are present with captions and are of high quality.
Mechanics	More than 8 grammatical errors were made.	More than 5 grammatical errors were made.	No More than 4 grammatical errors.

Comic Book Rubric:

	Inadequate- 1 Point	Developing- 2 Points	Satisfactory- 3 Points
Collaboration & Communication	The student did not adequately work together in order to make the comic book strip.	The student collaborated with their team for the most part, but did not help the team in coming to a conclusion about how to make the comic book strip.	The student was able to collaborate with their team in order to come to a conclusion about what to make for their comic book strip.
Clarity & Neatness	Comic strip is hard to read and very few pictures and words are clearly written or drawn.	Comic strip is easy to read and most pictures and words are clearly written or drawn.	Comic strip is neatly drawn and all pictures and words are clearly written and drawn.
Required Elements	Comic strip has 2 or less of the required elements.	Comic strip has 3 out of 4 of the required elements.	Comic strip has all required elements, which are: At least 15 boxes of comics, must explain collaboration in comic strips, and have at least 10 sentences in the comic strip, and the comic strip is colored neatly.
Mechanics	More than 8 grammatical errors were made.	More than 5 grammatical errors were made.	No More than 4 grammatical errors.

Name: _____

1. How did you feel about the seminar?
2. Reflect on your own experience of the seminar.
3. If your opinion was changed during the seminar, what changed it?
4. Using your own knowledge on this topic, choose a question to start a new socratic seminar.
5. What was the best part of the seminar? The worst?
6. What was your overall opinion of the socratic seminar?
7. How does investigation encourage collaboration?

Close reading story as the example:

<https://science.howstuffworks.com/csi.htm> (only page 1)

How Crime Scene Investigation Works

On TV shows like "CSI," viewers get to watch as investigators find and collect evidence at the scene of a crime, making blood appear as if by magic and swabbing every mouth in the vicinity-. Many of us believe we have a pretty good grip on the process, and rumor has it criminals are

getting a jump on the good guys using tips they pick up from these shows about forensics.

But does Hollywood get it right? Do crime scene investigators follow their DNA samples into the lab? Do they interview suspects and catch the bad guys, or is their job all about collecting physical evidence? In this article, we'll examine what really goes on when a CSI "processes a crime scene" and get a real-world view of crime scene investigation from a primary scene responder with the Colorado Bureau of Investigation.

CSI Basics

-Crime scene investigation is the meeting point of science, logic and law. "Processing a crime scene" is a long, tedious process that involves purposeful documentation of the conditions at the scene and the collection of any physical evidence that could possibly illuminate what happened and point to who did it. There is no typical crime scene, there is no typical body of evidence and there is no typical investigative approach.

At any given crime scene, a CSI might collect dried blood from a windowpane — without letting his arm brush the glass in case there are any latent fingerprints there, lift hair off a victim's jacket using tweezers so he doesn't disturb the fabric enough to shake off any of the white powder (which may or may not be cocaine) in the folds of the sleeve, and use a sledge hammer to break through a wall that seems to be the point of origin for a terrible smell.

All the while, the physical evidence itself is only part of the equation. The ultimate goal is the conviction of the perpetrator of the crime. So while the CSI scrapes off the dried blood without smearing any prints, lifts several hairs without disturbing any trace evidence and smashes through a wall in the living room, he's considering all of the necessary steps to preserve the evidence in its current form, what the lab can do with this evidence in order to reconstruct the crime or identify the criminal, and the legal issues involved in making sure this evidence is admissible in court.

The investigation of a crime scene begins when the CSI unit receives a call from the police officers or detectives on the scene. The overall system works something like this:

- The CSI arrives on the scene and makes sure it is secure. She does an initial walk-through to get an overall feel for the crime scene, finds out if anyone moved anything before she arrived, and generates initial theories based on visual examination. She makes note of

potential evidence. At this point, she touches nothing.

- The CSI thoroughly documents the scene by taking photographs and drawing sketches during a second walk-through. Sometimes, the documentation stage includes a video walk-through, as well. She documents the scene as a whole and documents anything she has identified as evidence. She still touches nothing.
- Now it's time to touch stuff — very, very carefully. The CSI systematically makes her way through the scene collecting all potential evidence, tagging it, logging it and packaging it so it remains intact on its way to the lab. Depending on the task breakdown of the CSI unit she works for and her areas of expertise, she may or may not analyze the evidence in the lab.
- The crime lab processes all of the evidence the CSI collected at the crime scene. When the lab results are in, they go to the lead detective on the case.

Every CSI unit handles the division between field work and lab work differently. What goes on at the crime scene is called crime scene investigation (or crime scene analysis), and what goes on in the laboratory is called forensic science. Not all CSIs are forensic scientists. Some CSIs only work in the field — they collect the evidence and then pass it to the forensics lab. In this case, the CSI must still possess a good understanding of forensic science in order to recognize the specific value of various types of evidence in the field. But in many cases, these jobs overlap.

Joe Clayton is a primary crime scene responder at the Colorado Bureau of Investigation (CBI). He has 14 years of field experience and also is an expert in certain areas of forensic science. As Clayton explains, his role in laboratory analysis varies according to the type of evidence he brings back from the crime scene:

-"Depending on what scientific examinations are needed or requested, I may be involved in the actual "bench work" once the evidence is submitted to the laboratory. I have expertise in blood pattern identification (blood spatter), trajectory determination, serology (blood and body fluids), and photography. I also have knowledge in many other areas (firearms, fingerprints, questioned documents...) that may assist me at the scene. As a primary crime scene responder at the CBI, my role at the scene may involve one or more of my particular disciplines. While I would not do a functionality test on a firearm here at the laboratory, my role at the crime scene would be to collect the gun and understand its potential evidentiary significance."

Story students will read for socratic seminar:

<https://science.howstuffworks.com/csi.htm> (only page 5)

How Crime Scene Investigation Works: Evidence Collection

In -collecting evidence from a crime scene, the CSI has several main goals in mind: Reconstruct the crime, identify the person who did it, preserve the evidence for analysis and collect it in a way that will make it stand up in court.

Trace Evidence

Trace evidence might include gun-shot residue (GSR), paint residue, chemicals, glass and illicit drugs. To collect trace evidence, a CSI might use tweezers, plastic containers with lids, a filtered vacuum device and a knife. He will also have a biohazard kit on hand containing disposable latex gloves, booties, face mask and gown and a biohazard waste bag.

If the crime involves a gun, the CSI will collect clothing from the victim and anyone who may have been at the scene so the lab can test for GSR. GSR on the victim can indicate a close shot, and GSR on anyone else can indicate a suspect. The CSI places all clothing in sealed paper bags for transport to the lab. If he finds any illicit drugs or unknown powders at the scene, he can collect them using a knife and then seal each sample in a separate, sterile container. The lab can identify the substance, determine its purity and see what else is in the sample in trace amounts. These tests might determine drug possession, drug tampering or whether the composition could have killed or incapacitated a victim.

Technicians discover a lot of the trace evidence for a crime in the lab when they shake out bedding, clothing, towels, couch cushions and other items found at the scene. At the CBI Denver Crime Lab, technicians shake out the items in a sterile room, onto a large, white slab covered with paper.

The technicians then send any trace evidence they find to the appropriate department. In the Denver Crime Lab, things like soil, glass and paint stay in the trace-evidence lab, illicit drugs and unknown substances go to the chemistry lab, and hair goes to the DNA lab.

Body Fluids

Body fluids found at a crime scene might include blood, semen, saliva, and vomit. To identify and collect these pieces of evidence, a CSI might use smear slides, a scalpel, tweezers, scissors, sterile cloth squares, a UV light, protective eyewear and [luminol](#). He'll also use a blood collection kit to get samples from any suspects or from a living victim to use for comparison.

If the victim is dead and there is blood on the body, the CSI collects a blood sample either by submitting a piece of clothing or by using a sterile cloth square and a small amount of distilled water to remove some blood from the body. Blood or saliva collected from the body may belong to someone else, and the lab will perform DNA analysis so the sample can be used later to compare to blood or saliva taken from a suspect. The CSI will also scrape the victim's nails for skin -- if there was a struggle, the suspect's skin (and therefore DNA) may be under the victim's nails. If there is dried blood on any furniture at the scene, the CSI will try to send the entire piece of furniture to the lab. A couch is not an uncommon piece of evidence to collect. If the blood is on something that can't reasonably go to the lab, like a wall or a bathtub, the CSI can collect it by scraping it into a sterile container using a scalpel. The CSI may also use [luminol](#) and a portable UV light to reveal blood that has been washed off a surface.

If there is blood at the scene, there may also be blood spatter patterns. These patterns can reveal the type of weapon that was used -- for instance, a "cast-off pattern" is left when something like a baseball bat contacts a blood source and then swings back. The droplets are large and often tear-drop shaped. This type of pattern can indicate multiple blows from a blunt object, because the first blow typically does not contact any blood. A "high-energy pattern," on the other hand, is made up of many tiny droplets and may indicate a gun shot. Blood spatter analysis can indicate which direction the blood came from and how many separate incidents created the pattern. Analyzing a blood pattern involves studying the size and shape of the stain, the shape and size of the blood droplets and the concentration of the droplets within the pattern. The CSI takes pictures of the pattern and may call in a blood-spatter specialist to analyze it.

Hair and Fibers

A CSI may use combs, tweezers, containers and a filtered vacuum device to collect any hair or fibers at the scene. In a rape case with a live victim, the CSI accompanies the victim to the hospital to obtain any hairs or fibers found on the victim's body during the medical examination.

The CSI seals any hair or fiber evidence in separate containers for transport to the lab.

A CSI might recover carpet fibers from a suspect's shoes. The lab can compare these fibers to carpet fibers from the victim's home. Analysts can use hair DNA to identify or eliminate suspects by comparison. The presence of hair on a tool or weapon can identify it as the weapon used in the crime. The crime lab can determine what type of animal the hair came from (human? dog? cow?); and, if it's human, analysts can determine the person's race, what part of the body the hair came from, whether it fell out or was pulled and whether it was dyed.

Fingerprints

Tools for recovering fingerprints include brushes, powders, tape, chemicals, lift cards, a magnifying glass and Super Glue. A crime lab can use fingerprints to identify the victim or identify or rule out a suspect. There are several types of prints a CSI might find at a crime scene:

- **Visible:** Left by the transfer of blood, paint or another fluid or powder onto a surface that is smooth enough to hold the print; evident to the naked eye
- **Molded:** Left in a soft medium like soap, putty or candle wax, forming an impression
- **Latent:** Left by the transfer of sweat and natural oils from the fingers onto a surface that is smooth enough to hold the print; not visible to the naked eye

A perpetrator might leave prints on porous or nonporous surfaces. Paper, unfinished wood and cardboard are porous surfaces that will hold a print, and glass, plastic and metal are nonporous surfaces. A CSI will typically look for latent prints on surfaces the perpetrator is likely to have touched. For instance, if there are signs of forced entry on the front door, the outside door knob and door surface are logical places to look for prints. Breathing on a surface or shining a very strong light on it might make a latent print temporarily visible. When you see a TV detective turn a doorknob using a handkerchief, she's probably destroying a latent print. The only way not to corrupt a latent print on a nonporous surface is to not touch it. Proper methods for recovering latent prints include:

- **Powder** (for nonporous surfaces): Metallic silver powder or velvet black powder A CSI uses whichever powder contrasts most with the color of material holding the print. He gently brushes powder onto the surface in a circular motion until a print is visible; then he starts brushing in the direction of the print ridges. He takes a photo of the print before using

tape to lift it (this makes it stand up better in court). He adheres clear tape to the powdered print, draws it back in a smooth motion and then adheres it to a fingerprint card of a contrasting color to the powder.

- **Chemicals** (for porous surfaces): Iodine, ninhydrin, silver nitrate The CSI sprays the chemical onto the surface of the material or dips the material into a chemical solution to reveal the latent print.
- **Cyanoacrylate** (Super Glue) fuming (for porous or nonporous surfaces) The CSI pours Super Glue into a metal plate and heats it to about 120 F. He then places the plate, the heat source and the object containing the latent print in an airtight container. The fumes from the Super Glue make the latent print visible without disturbing the material it's on.

Footwear Impressions and Tool Marks

A latent fingerprint is an example of a two-dimensional impression. A footwear impression in mud or a tool mark on a window frame is an example of a three-dimensional impression. If it's not possible to submit the entire object containing the impression to the crime lab, a CSI makes a casting at the scene.

A casting kit might include multiple casting compounds (dental gypsum, Silicone rubber), snow wax (for making a cast in snow), a bowl, a spatula and cardboard boxes to hold the casts.

If a CSI finds a footwear impression in mud, she'll photograph it and then make a cast. To prepare the casting material, she combines a casting material and water in a Ziploc-type bag and kneads it for about two minutes, until the consistency is like pancake batter. She then pours the mixture into the edge of the track so that it flows into the impression without causing air bubbles. Once the material overflows the impression, she lets it set for at least 30 minutes and then carefully lifts the cast out of the mud. Without cleaning the cast or brushing anything off it (this would destroy any trace evidence), she puts the cast into a cardboard box or paper bag for transport to the lab.

For toolmark impressions, a cast is much harder to use for comparison than it is with footwear. If it's not feasible to transport the entire item containing the tool mark, a CSI can make a silicone-rubber cast and hope for the best. There are two types of tool marks a CSI might find at a crime scene:

- **Impressed:** A hard object contacts a softer object without moving back and forth (for

example, a hammer mark on a door frame). The tool mark is an impression of the tool's shape. It's difficult to make a definite match with an impressed tool mark.

- **Striated:** A hard object contacts a softer object and moves back and forth (for example, pry marks on a window frame). The tool mark is a series of parallel lines. It's easier to make a definite match with a striated tool mark.

-In toolmark analysis, the lab might determine what sort of tool made the mark and whether a tool in evidence is the tool that made it. It can also compare the tool mark in evidence to another toolmark to determine if the marks were made by the same tool.

Firearms

If a CSI finds any firearms, bullets or casings at the scene, she puts gloves on, picks up the gun by the barrel (not the grip) and bags everything separately for the lab. Forensic scientists can recover serial numbers and match both bullets and casings not only to the weapon they were fired from, but also to bullets and casings found at other crime scenes throughout the state (most ballistics databases are statewide). When there are bullet holes in the victim or in other objects at the scene, specialists can determine where and from what height the bullet was fired from, as well as the position of the victim when it was fired, using a laser trajectory kit. If there are bullets embedded in a wall or door frame, the CSI cuts out the portion of the wall or frame containing the bullet -- digging the bullet out can damage it and make it unsuitable for comparison.

Documents

A CSI collects and preserves any diaries, planners, phone books or suicide notes found at a crime scene. He also delivers to the lab any signed contracts, receipts, a torn up letter in the trash or any other written, typed or photocopied evidence that might be related to the crime. A documents lab can often reconstruct a destroyed document, even one that has been burned, as well as determine if a document has been altered. Technicians analyze documents for forgery, determine handwriting matches to the victim and suspects, and identify what type of machine was used to produce the document. They can rule out a printer or photocopier found at the scene or determine compatibility or incompatibility with a machine found in a suspect's possession.

Whenever a CSI discovers a piece of evidence at the scene, she photographs it, logs it, -recovers it and tags it. An evidence tag may include identification information such as time, date and exact location of recovery and who recovered the item, or it may simply reflect a serial number that

corresponds to an entry in the evidence log that contains this information. The crime scene report documents the complete body of evidence recovered from the scene, including the photo log, evidence recovery log and a written report describing the crime scene investigation.

Lesson Three:

Collaboration within an Investigation

Taba Model

TEACHER NAME		Lesson #
Hannah Steele		3
MODEL	CONTENT AREA	GRADE LEVEL
Taba	ELA	4
CONCEPTUAL LENS		LESSON TOPIC
Investigation		Collaboration within a Crime Scene Investigation
LEARNING OBJECTIVES <i>(from State/Local Curriculum)</i>		
- Refer to details and examples in a text when explaining what the text says explicitly and when drawing inferences from the text. - Explain events, procedures, ideas, or concepts in a text, including what happened and why, based on specific information in the text. - Interpret information presented visually, orally, or quantitatively and explain how the information contributes to an understanding of the text in which it appears. - Explain how an author uses reasons and evidence to support particular points in a text.		
THE ESSENTIAL UNDERSTANDING <i>(What is the overarching idea students will understand as a result of this lesson?)</i>		THE ESSENTIAL QUESTION <i>(What question will be asked to lead students to "uncover" the Essential Understanding)</i>
<i>Investigation Encourage Collaboration</i>		<i>How does investigation encourage collaboration?</i>
CONTENT KNOWLEDGE <i>(What factual information will students learn in this lesson?)</i>		PROCESS SKILLS <i>(What will students be able to do as a result of this lesson?)</i>
Students will know.... - That investigation encourages collaboration - That it takes a team to solve a case. - That a people in the justice system must be able to communicate and collaborate with their team - Vocabulary that is specific to forensic science, crime scenes, and police. Evidence: material that is found at the scene of a crime Collaboration: to work with another person		Students will be able to.... - Work collaboratively - Create questions - Explain - Analyze - Maintain dialogue - Compare and Contrast - Problem Solve - Categorize by similarities - Summarize - Think Critically

or group in order to achieve or do something ● Forensic Scientist: specialist in a field of science who applies their knowledge to the purposes of law ● Forensic Artist: graphic artist that renders free-hand or computerized drawings, enhancements, and reconstructions in order to have a sketch of a person. ● Police Sketch: a picture of someone the police are looking for ● Eye Witness: a person who sees something happen and is able to describe it ● Perpetrator: someone that does something that is illegal or wrong ● Rapport: a friendly relationship ● Students will know that collaboration happens within police/forensic science work. ● Students will know that there are sketch artists that make sketches of wanted criminals. ● Students will know that collaboration happens between police and eye witnesses.	● Subsuming
---	---

GUIDING QUESTIONS

What questions will be asked to support instruction?

Include both "lesson plan level" questions as well as questions designed to guide students to the essential understanding

Pre-Lesson Questions:	During Lesson Questions:	Post Lesson Questions:
● What does collaboration mean? ● What is a forensic scientist? ● What is investigation? ● What types of evidence can be found at a crime scene? ● What do you know about crime scenes? ● How do forensic scientists help each other to solve crimes? ● What investigation techniques do forensic scientists use? ● How do forensic scientists collaborate in order to solve a crime? ● What do you know about forensic scientists in Durham County?	● How is investigation identified in your article? ● What is happening during the investigation? ● What aspects of investigation are written about in the article? ● How does the investigation encourage collaboration in the article? ● Who is responsible for collaborating in the article? ● How would you label these groups of items to go together? ● Why did you group and label them as you did? ● Why did you decide to use those groups to split the words into?	● What is the relationship between investigation and collaboration? ● How do we know that crime scene investigations need collaboration? ● Where do we see collaboration in our world? ● How can investigation be a positive experience? ● How can investigation be a negative experience? ● How does investigation encourage collaboration?

● Why does a crime scene need an investigation?	● Which groups could you subsume under another group? ● How else can you group these words/phrases? ● How does that align with investigation and collaboration? ● What is something that is true about collaboration?		
DIFFERENTIATION (Describe how the planned learning experience has been modified to meet the needs of gifted learners. Note: Modifications may be in one or more of the areas below. Only provide details for the area(s) that have been differentiated for this lesson.			
Content	Process	Product	Learning Environment
The content for this lesson uses above grade level material, therefore the material will be more challenging.	Students will engage in critical thinking as they analyze the concept of “investigation” through grouping and regrouping.		Students will work in different environments during the lesson: independently, small group, and whole group.

PLANNED LEARNING EXPERIENCES

(What will the teacher input? What will the students be asked to do? For clarity, please provide detailed instructions)

Engage and Connect - *This phase focuses on piquing students' interest and helping them access prior knowledge. This is the introduction to the lesson that motivates or hooks the students.*

The teacher will share the following video about police sketches to gain students interest.
https://youtu.be/InshnG_OhWk

The teacher will ask pre-lesson questions as part of the engage and connect portion of the lesson to get students to think about the concept and topics.

- What does collaboration mean?
- What is a forensic scientist?
- What is investigation?
- What types of evidence can be found at a crime scene?
- What do you know about crime scenes?
- How do forensic scientists help each other to solve crimes?
- What investigation techniques do forensic scientists use?
- How do forensic scientists collaborate in order to solve a crime?
- What do you know about forensic scientists in Durham County?
- Why does a crime scene need an investigation?

The teacher will introduce and define the following vocabulary words through a jigsaw puzzle.

- **Evidence:** material that is found at the scene of a crime
- **Collaboration:** to work with another person or group in order to achieve or do something
- **Forensic Scientist:** specialist in a field of science who applies their knowledge to the purposes of law
- **Forensic Artist:** graphic artist that renders free-hand or computerized drawings, enhancements, and reconstructions in order to have a sketch of a person.
- **Police Sketch:** a picture of someone the police are looking for
- **Eye Witness:** a person who sees something happen and is able to describe it
- **Perpetrator:** someone that does something that is illegal or wrong
- **Rapport:** a friendly relationship

For each vocabulary word, there will be a two piece jigsaw puzzle to go with it. There will be the vocabulary word on one piece and the definition on another, so then the pieces can be matched together. Students will then be given a set of each vocabulary words. Working in groups the students will collaborate in order to match the correct pieces together.

Students will then watch a youtube video identifying forensic scientists collaborating together on a crime scene, and how they work together to collect evidence. This video will provide knowledge and understanding of how forensic scientists collaborate in order to solve a crime, which they will later be reading about in the lesson.

<https://youtu.be/tqtS4wMfZY0>

Explore - *In this phase, the students have experiences with the concepts and ideas of the lesson. Students are encouraged to work together without direct instruction from the teacher. The teacher acts as a facilitator. Students observe, question, and investigate the concepts to develop fundamental awareness of the nature of the materials and*

ideas.

1. **LISTING:** The teacher will divide students into groups. Students will independently read the article. The article is "How Police Sketches Work" by Cristen Conger (Only Page 1-3) . As students read the article they will list or underline words and phrases that are related to investigation and collaboration.

After the students have created their lists in their groups, the teacher will call on the groups individually to share their lists. As students are sharing the teacher will be writing different items onto the board clarifying as necessary, by asking, "How does this item relate to the investigation and collaboration within a crime scene?" (Facet: Explain/Interpret- Students will have to explain why what they underlined relates to the concept and how they interpreted it to connect to the concept.)

Explain - *Students communicate what they have learned so far and figure out what it means. This phase also provides an opportunity for teachers to directly introduce a concept, process, or skill to guide students toward a deeper understanding.*

2. **GROUPING & LABELING:** Students will continue working in groups of 3-4. The students will pick 20 words or phrases from the list that we made together on the board. In groups, the students will create smaller word groups based on the similarities; Which of the words/phrases go together as they relate to aspects of investigation. While grouping their items students must follow these rules:
 - They must have at least four different groups
 - Each group must have at least three different items in it
 - No word/phrase can be used in more than one group

As students are working the teacher will be circulating the room and helping out the students as needed. If a group gets stuck, the teacher will ask probing questions that align with the essential question. However, students will make their own deductions about where the word/phrase should be placed. As students finish, the teacher will instruct students to label the groups to indicate how the words in the group relate to the concept of "investigation". (Example: How forensics scientists investigate, How collaboration helps investigation, How investigation helps people) The students will explain the reasoning to the teacher. The teacher will have the students describe the similarities and differences among the groups. The teacher will ask the students to defend their choice of label and the reason for the words being grouped as they are. Students will share their labels and reasons for grouping with the whole class. (Facets: Perspective/Apply Students will have to hear each other's point of view and how it may differ from their own. Students will take their original list and apply different aspects of the same concept to the original list.)

Teacher asks during lesson questions:

- How is investigation identified in your article?
- What is happening during the investigation?
- What aspects of investigation are written about in the article?
- How does the investigation encourage collaboration in the article?
- Who is responsible for collaborating in the article?
- How would you label these groups of items to go together?
- Why did you group and label them as you did?
- Why did you decide to use those groups to split the words into?
- Which groups could you subsume under another group?
- How else can you group these words/phrases?
- How does that align with investigation and collaboration?
- What is something that is true about collaboration?

Elaborate —Allow students to use their new knowledge and continue to explore its implications. At this stage students expand on the concepts they have learned, make connections to other related concepts, and apply their understandings to the world around them in new ways

- 3. SUBSUMING, REGROUPING, RENAMING:** Student groups will be challenged to regroup the items. Subsuming if they are able (one group will merge with another group) The new groups will be new categories with new labels. The groups will follow these expectations:
- Items can be used in more than one group
 - New labels must be assigned for the group
 - Groups must have at least three words per group since words can be used in more than one group
 - Categories must be based on some aspect of the concept, “investigation”

The teacher will have all groups share their new groups they just made, and the words in them.

(Facet: Apply- Students will take groups that they already have made and then apply different expectations to them in order for the groups to be successful.)

Evaluate: This phase assesses both learning and teaching and can use a wide variety of informal and formal assessment strategies.

- 4. GENERALIZING:** Each student group will create a statement which represents the relationship between the concept of “investigation” and the concept of “collaboration”. What is seen between the relationship and how does it help solve a crime?

Each group will then defend their generalization. The whole class will listen to generalizations of each group, complete a graphic organizer about the generalizations in order to choose the generalization which most represents the relationship between “investigation” and “collaboration”. Whole group the class will vote on the best generalization. (Graphic Organizer attached)

(Facet: Explain- Students will have to be able to thoroughly explain how there is a relationship between investigation and collaboration.)

The teacher will ask post-lesson questions:

- What is the relationship between investigation and collaboration?
- How do we know that crime scene investigations need collaboration?
- Where do we see collaboration in our world?
- How can investigation be a positive experience?
- How can investigation be a negative experience?
- How does investigation encourage collaboration?

<https://people.howstuffworks.com/police-sketch.htm>

How Police Sketches Work

In the 1880s, French criminologist Alphonse Bertillon developed a particular obsession with itemizing physical characteristics of [prisoners](#) brought in to the Paris police station where he started out as a records clerk [source: [National Library of Medicine](#)]. Bertillon painstakingly measured prisoners' arm lengths, head circumferences, ear formations and other anatomical markers; made notes of [tattoos](#) and scars; and

photographed their facial frontals and profiles. As he amassed this data, Bertillon developed a novel system for identifying inmates, which became known as criminal anthropometry. After French police used Bertillon's identification practices to nab 241 repeat offenders in 1884 alone, this early [forensics science](#) spread to other police departments around Europe and the United States [source: [National Library of Medicine](#)]. Today, one of the most commonly employed anthropometry tactics that hasn't changed all that much during the intervening century is the police sketch.

The [FBI](#) cites an [eye witness](#) sketch of Timothy McVeigh as a crucial piece of evidence that eventually brought the mastermind of the Oklahoma City bombing to justice. Ten hours after the 1995 explosion at the Alfred P. Murrah Federal Building that killed 168 people, a forensic artist with the FBI's Investigative and Prosecutive Graphic Unit sketched out the perpetrator's face based on interviews with people who had spotted McVeigh in Junction City, Kan. renting a truck that was later found at the crime scene [source: [FBI](#)]. Having seen that relatively rudimentary FBI sketch, Oklahoma State Troopers who later arrested McVeigh on driving- and weapon-related charges unrelated to the bombing didn't release their suspicious-looking prisoner from jail.

Although the McVeigh case is an extraordinary example of a suspect sketch helping successfully nab a criminal on the lam, police sketches are nevertheless a routine part of law enforcement investigations. A forensic artist, who might double as a patrol officer or serve as a civilian contractor, usually interviews crime scene witnesses and victims about a perpetrator's appearance to create a composite sketch. The composite could be drawn completely by hand or computer generated. Sometimes, forensic artists use a combination of the two methods.

But no matter how fine-tuned the police sketch methodology, the most crucial component of an accurate facial composite is an eye witness' memory. Describing the face of someone who might have fled a crime scene or inflicted bodily harm on you might be an erroneous process. The human memory can play tricks, erasing certain details and amplifying others, for instance giving someone a beard when he had a mustache or a square jaw when it was actually rounded [source: [Raeburn](#)]. And for that reason, forensic artists must conduct preliminary interviews carefully and with sensitivity to elicit as many precise facial details as possible.

Gathering Clues

Before forensic artists can begin composing police sketches, they obviously need an idea of what their subjects look like. For that reason, the eyewitness interview is the most important step in the police sketch process [source: [Taister](#)]. Officers or artists doing the questioning need to understand what to ask and how

to approach interviewees to cull the most accurate information, since the [human memory](#) for faces can be easily fooled. Often, people have a difficult time recalling specific facial features, and the more time that lapses between a crime and the police sketch interview, the fuzzier those memories become [source: [Raeburn](#)].

Depending on the crime and the person being interviewed, police sketch sit-downs can last hours. To get an idea of how these question-and-answer sessions are conducted, consider a 2007 study examining people's ability to describe faces for creating forensics facial composites. It broke down the cognitive interview into three phases: rapport building, free recall and cued recall [source: [Frowd et al.](#)].

Rapport building simply involves casual conversation -- "Hi, how are you?" -- in an effort to relax the interviewee. Next, the interviewee is asked to recall as many specific details about the criminal as possible. Often, participants begin by discussing hair and general face shape [source: [Frowd et al.](#)]. During the last step, cued recall, the forensic artist will ask the interviewee about any defining features they don't immediately remember. At that point, it might be helpful to jog the interviewee's memory with mug shots of previously incarcerated criminals. That way, seeing a similar nose or eyes or jaw line might spark a flashback. Forensic artists may also keep a catalog of celebrity portraits around since the famous faces can spark visual cues as well [source: [Raeburn](#)].

While forensic artists keenly focus on minute facial features, former New York Police Department artist Stephen Manusci notes that victims are more apt to provide broader descriptions, such as a "horse face" or "bug eyes" [source: [Lichtman](#)]. The role of an adept artist is to break down, or "decode," those vague generalizations into a collection of discrete facial characteristics. That doesn't mean the forensic artist should ever drill someone for more characteristics; pressuring the interviewee might stifle, rather than stimulate his memory [source: [Muench](#)]. As the sketch takes shape, interviewees will also begin to either show recognition or point out discrepancies.

Portrait of a Criminal

Drawing a police sketch by hand clearly requires a degree of artist talent, but it doesn't necessarily demand a degree from art school. Depending on the size of the police department, forensic artists may or may not be full-time employees. In small-town departments, a patrol officer with a knack for drawing may actually volunteer for the role, while larger, better-funded agencies may employ civilians formally trained at the FBI's forensic facial imaging laboratory or other forensic art training programs [source: [Echaore-McDavid and McDavid](#)].

The police sketching process also varies by forensic artist. For instance, former NYPD forensic artist Stephen Manusci takes the old school pencil and paper route, refining the face as needed with input from victims or eyewitnesses [source: [Lichtman](#)]. Roderick Scratchard, forensic artist with the Philadelphia Police Department, takes the opposite route. First, he creates a computer-generated composite based on photos of faces and features that interviewees have selected. Then, he draws the final police sketch by hand based on that computer composite, tweaking the appearance as requested [source: [Avril](#)].

Computers have played a role in police sketches since the 1960s, with the arrival of the identi-Kit composite software. Police departments without the resources to retain a bona fide forensic artist could instead purchase identi-Kit -- and now a host of other programs -- to automatically generate facial composites by selecting from a gallery of profiles and traits. Reliance on computers has proven controversial, however, as studies have shown that hand-drawn police sketches often turn out more accurately than computer-only composites [source: [Avril](#)]. Newer programs do a better job at producing more nuanced mug shots. Harkening back to Bertillon's cross-indexing to pinpoint repeat offenders, a computer program developed at Michigan State University in 2011 digitally analyzes hand-drawn composites and compares them to photographed mug shots stored in law enforcement databases. Due to high recidivism rates, the highly publicized technology could help officers identify suspects more quickly. Nevertheless, the FBI isn't impressed by any technological advances. Due to the anecdotal accuracy, when it comes to the paper versus computer quandary, hand drawn composites are a must-have in the agency's book [source: [FBI](#)].

But whether a facial composite is drawn by a person or a computer, the question of whether it looks anything like the person who committed the crime remains sketchy

Generalization	What does the generalization say about the two concepts?	How does the generalization connect investigation and collaboration?	What makes this generalization strong?
1.			
2.			
3.			
4.			
5.			
6.			

RUBRICS FOR GENERALIZATION STATEMENTS

Rubric for Generalization Statement:

	Inadequate- 1 Point	Developing- 2 Points	Satisfactory- 3 Points
Collaboration & Communication	The student did not adequately work together in order to create a generalization.	The student collaborated with their team for the most part, but did not help the team in coming to conclusion of the murder.	The student was able to collaborate with their forensic team in order to come to a conclusion about the crime.
Content	The student did not adequately generalize the relationship between investigation and collaboration.	The student somewhat generalized the relationship between investigation and collaboration.	The student was able to adequately generalize the relationship between investigation and collaboration.
Presentation	The student did not present or the presentation was not completed.	The student presented their findings but did not explain how the evidence was linked to the suspect.	The student presented their findings from the crime scene and fully explained how the evidence was linked to the suspect.

Lesson Four:

Crime Scene Investigation

Creative Problem Solving

Model

TEACHER NAME		Lesson #
Hannah Steele		4
MODEL	CONTENT AREA	GRADE LEVEL
Creative Problem Solving	ELA	4
CONCEPTUAL LENS		LESSON TOPIC
Investigation		Crime Scene investigation
LEARNING OBJECTIVES <i>(from State/Local Curriculum)</i>		
SCIENCE 4.L.1: Understand the effects of environmental changes, adaptations and behaviors that enable animals (including humans) to survive in changing habitats. ENGLISH LANGUAGE ARTS RI.4.1: Refer to details and examples in a text when explaining what the text says explicitly and when drawing inferences from the text. RI.4.3: Explain events, procedures, ideas, or concepts in a historical, scientific, or technical text, including what happened and why, based on specific information in the text. RI.4.7: Interpret information presented visually, orally, or quantitatively and explain how the information contributes to an understanding of the text in which it appears		
THE ESSENTIAL UNDERSTANDING <i>(What is the overarching idea students will understand as a result of this lesson?)</i>		THE ESSENTIAL QUESTION <i>(What question will be asked to lead students to “uncover” the Essential Understanding)</i>
<i>Investigation Encourage Collaboration</i>		<i>How does investigation encourage collaboration?</i>
CONTENT KNOWLEDGE <i>(What factual information will students learn in this lesson?)</i>		PROCESS SKILLS <i>(What will students be able to do as a result of this lesson?)</i>
Students will know.... • That collaboration happens between people in order to solve a crime. • That investigation requires many skills • Asking questions can help to solve a case • That evidence plays an important role in solving a crime. • Vocabulary that is specific to investigating a crime scene: ○ Process: a set of actions that need to be taken in order to investigate a crime scene.		Students will be able to.... • Problem Solve • Summarize • Deduce • Collaborate • Investigate • Observe • Make Conclusions • Analyze • Explain

○ Collaboration: to work with another person or group in order to achieve or do something. ○ Investigation: to examine or research a crime scene. ○ Evidence: material that is found at the scene of a crime. ○ Suspect: a person that is thought to be guilty of a crime. ○ Crime Scene: a place where a crime has been committed and forensic evidence can be gathered. ○ Perpetrator: a person who is responsible for a crime. ○ Theory: an idea used to account for a situation or justify a course of action. ● That it takes a team in order to solve a case. ● That not everything in a crime scene investigation is a simple yes or no answer. ● You need to have evidence to support your theory of who committed the crime.		
GUIDING QUESTIONS What questions will be asked to support instruction? Include both “lesson plan level” questions as well as questions designed to guide students to the essential understanding		
Pre-Lesson Questions: ● What surprised you about crime scene investigations? ● What do you think is the most important aspect of the crime scene investigation? ● How do you use collaboration when investigating a crime scene? ● What is a problem? ● What is a solution? ● How do you solve a problem? ● How is investigation represented in a crime scene? ● How is collaboration represented in a crime scene? ● Why do we need to investigate a crime scene?	During Lesson Questions: ● What did you underline/highlight? Why is this important? ● How does what you underline/highlight relate to investigation? ● How does what you underline/highlight relate to collaboration? ● What is your goal for this task? ● How do you hope to solve your goal? ● What have you learned so far about investigation? ● What have you learned about collaboration? ● What is your statement? ● Why did you choose that	Post Lesson Questions: ● Who do you believe is responsible for the murder? ● What investigating skills did you need to use in order to investigate this crime? ● How did you use collaboration in order to investigate this crime? ● What conflicts, if any, arrived during your collaboration? How did you work through them? ● What is the relationship between investigation and collaboration at a crime scene? ● What did you consider as you worked to develop a suspect for the crime? ● What worked well in the problem-solving process?

• How do you solve a crime scene investigation? • How do you process a crime scene? • What skills are needed in order to investigate a crime scene? • What materials do you need in order to process a crime scene properly? •	person for the crime at this point in your investigation? • Why could the suspect have not been someone else? • What is an issue in this case? • What are some key factors to consider while solving this case? • What additional information do you need to figure out in order to solve this case?	• What is something you would have done better? • How does investigation encourage collaboration?
--	--	--

DIFFERENTIATION

(Describe how the planned learning experience has been modified to meet the needs of gifted learners. Note: Modifications may be in one or more of the areas below. Only provide details for the area(s) that have been differentiated for this lesson.)

Content	Process	Product	Learning Environment
The content for this lesson uses above grade level material, therefore the material will be more challenging.	Students will be participating in creative problem solving. Students will use critical thinking and inquiry skills.		Students will be working in different environments during this lesson; at a "crime scene", in small groups, and independently.

PLANNED LEARNING EXPERIENCES

(What will the teacher input? What will the students be asked to do? For clarity, please provide detailed instructions)

Engage and Connect - *This phase focuses on piquing students' interest and helping them access prior knowledge. This is the introduction to the lesson that motivates or hooks the students.*

This lesson will take 1-2 hours to complete, but can also be broken up into smaller segments to complete. Students will observe fibers, fingerprints, footprints, hair DNA, and "blood" spatter. The students will be given tools in order to collect evidence like a real forensic scientist. I will set up the crime scene in a separate room, however it can still be done in your classroom, but desks will need to be moved out of the way.

To engage students, the teacher will show the following video clip: <https://youtu.be/lrmsHzNTSZ0> After showing the video, the teacher will ask the following questions:

- What surprised you about the logic puzzles?
- What was difficult about solving the crimes?
- What was something that helped you figure out the answer?

The teacher will ask the following pre-lesson question:

- What is a problem?
- What is a solution?
- How do you solve a problem?
- How is investigation represented in a crime scene?
- How is collaboration represented in a crime scene?
- Why do we need to investigate a crime scene?
- How do you solve a crime scene investigation?
- How do you process a crime scene?
- What skills are needed in order to investigate a crime scene?
- What materials do you need in order to process a crime scene properly?

The class will practice the key vocabulary for today's lesson. The teacher will use pear deck. The peardeck website will automatically put students into partners once they have logged in. (night shift and day shift) The partners will be given 1-3 vocabulary words to manipulate. When in partners they will be given the word and definition. The first partner will draw a picture to represent the word and the second partner will write an example of the word. Then they will move on to the next word. Once everyone has completed their words we will then vote for the best drawing and example from the class. (Facet: Apply/Explain--Using their background skills, students will use what they already know in order to draw a picture of the vocabulary word. Students will also explain what the definition is and examples of each word.)

<https://app.peardeck.com/vocab/presenter/tfybwtfhw/projector> (peardeck the students will do)

<https://youtu.be/s3RVbkW3qGY> (PearDeck Example on youtube watch from 4:01- 6:35 to see what students will see/do--not sure if you will be able to view link above)

Explore - *In this phase, the students have experiences with the concepts and ideas of the lesson. Students are encouraged to work together without direct instruction from the teacher. The teacher acts as a facilitator. Students observe, question, and investigate the concepts to develop fundamental awareness of the nature of the materials and ideas.*

1. MESS FINDING: The teacher will give the students a task, which is to figure out who committed the "murder". (task is attached below) Students will read the task independently, as they are reading students are to underline or

highlight “messes” that can help them to solve the murder. Once they have finished reading the task, students will write their goal for this lesson.

After students complete writing down their goal the teacher will ask the following questions:

- What did you underline/highlight? Why is this important?
- How does what you underline/highlight relate to investigation?
- How does what you underline/highlight relate to collaboration?
- What is your goal for this task?
- How do you hope to solve your goal?

After going through the questions, the teacher will have the students look at the rubrics before continuing to the crime scene. Students will read through the problem and expectations for the rubrics. The teacher will ask the following questions:

- How can you stay focused on the task and support the efforts of the group as a whole?
- How can you respectfully listen, interact, discuss, and contribute to the group?
- How can you follow through on assigned tasks and not depend on others to do the work?
- How can you contribute to the overall goal of the group?
- What is the most important thing to notice about the rubrics?
- How are the rubrics connected?

Rubric

	Inadequate- 1 Points	Developing- 2 Point	Satisfactory- 3 Points
Collaboration & Communication (based on team survey)	The student did not adequately work together in order to solve the crime.	The student collaborated with their team for the most part, but did not help the team in coming to conclusion of the murder.	The student was able to collaborate with their forensic team in order to come to a conclusion about the crime.
Questioning	The student was not able to come up with questions to ask the “suspects”	The student had questions, but they didn't necessarily relate back to the crime scene.	The student had deep and thought provoking questions that related back to the evidence.
Evidence Collection	The student did not adequately collect evidence from the crime scene.	The student was able to collect some evidence and ask some questions about the crime.	The student was able to collect evidence from the crime scene and ask questions pertaining to the crime scene.
Investigative Skills	The students' investigation skills do not show synthesis of how the evidence connected to the crime.	The students investigated the crime but were unable to fully synthesize how the suspect was guilty.	The student was able to investigate the crime with their team members and were able to synthesize the information found.
Presentation	The student did not present or the presentation was not completed.	The student presented their findings but did not explain how the evidence was linked to the suspect.	The student presented their findings from the crime scene and fully explained how the evidence was linked to the suspect.

Student Collaboration Survey (Each team member will do the survey on their team)

	Inadequate- 1 Points	Developing- 2 Point	Satisfactory- 3 Points
--	----------------------	---------------------	------------------------

Focus on Task	Rarely focuses on the task and what needs to be done. Lets others do the work.	Focuses on the task and what needs to be done most of the time. Other members sometimes need to remind this person to keep on task.	Consistently stay focused on the task and what needs to be done. Other group members can count on this person.
Working with Others	Rarely listens to, shares with, or supports the efforts of others. Often is not a good team player.	Usually listens to, shares with, and supports the efforts of others. Tries to not cause trouble within the group.	Listens to, shares with, and supports the efforts of others. Tries to keep people working well together.
Creative Problem- Solving	Does not try to solve problems or help others solve problems. Lets others do the work	Refines solutions suggested by others.	Actively looks for and suggests solutions to problems.
Contribution	Rarely provides useful ideas when participating in the group. May not participate.	Sometimes provides useful ideas when participating in the group. A good group member who does what is required.	Routinely provides useful ideas when participating in a group. A strong group member who works hard.

DATA FINDING:

Then students will be split into groups of 3-4 students and within their group they will look at the crime scene. For the first 5 minutes, students will observe the crime scene and write down notes about what they see. During this time students will not talk to one another and will not touch anything at the crime scene. After the 5 minutes is up students will go back to their seats and discuss with their group about what they noticed at the crime scene. (Facet: Perspective--Students will have to look at the crime scene with critical eyes to see the scene through their eyes and the murders.)

Students will be given the following paper in order to take notes while “in the field”:

Descriptive Notes	Reflective Notes
Tips: Focus your attention Start with wide angle; Look at the big picture, then zoom in for details Be detailed Describe precisely what you observe	Tips: Be Subjective Emphasize hunches and impressions Includes unanswered questions Correct mistakes and misunderstandings for other field notes Include insights and speculations

Withhold inferences and judgements	Make predictions
------------------------------------	------------------

Then, students will go back to the crime scene and collect evidence in order to solve the crime. The students will work together in order to collect evidence. The students will be given the necessary tools in order to do the job. (gloves, magnifying glasses, tweezers, camera, etc.) Give 10 - 20 minutes to collect the evidence. (Facet: Apply--will use skills that we have learned about in order to collect evidence at an "actual crime scene" Facet: Explain--will collect evidence and have to explain the significance of the evidence.)

Students will be given the following paper in order to take notes on the evidence they find:

Item	Description	Significance

After evidence is collected, students will return to their seats. Students will begin looking at all the evidence they have gathered and look at the important details from the police report. The students will work together to look at the "messes" from different viewpoints. As they are working students will list the most important information in order to help them solve the crime. (Question #1 in their CSI Journal- "What important information have you been able to find during the investigation? List as many ideas as you can." (Facet: Interpret--they will have to look at the crime and figure out how or why the criminal committed the crime. Facet: Perspective--they will have to look at the crime from multiple points of views in order to figure out who is guilty.)

Explain - *Students communicate what they have learned so far and figure out what it means. This phase also provides an opportunity for teachers to directly introduce a concept, process, or skill to guide students toward a deeper understanding.*

PROBLEM FINDING: As students are evaluating their evidence, students will come up with as many questions as they can about the crime scene. After looking at all of the questions, their evidence, and suspects, they will make conclusions about whom they think has committed the crime at this point in the investigation. As a group they will come up with a statement about whom they believe committed the crime and why. 5-10 minutes (Question 2 and 3 in their CSI Journal- "What questions do you have about the crime scene, the suspects, or the victim? Write down as many questions as you can." "At this point in your investigation, who do you think committed the murder? Why? What evidence supports your theory?")

The teacher will call the class back together and ask the following questions:

- What have you learned so far about investigation?
- What have you learned about collaboration?
- What is your statement?
- Why did you choose that person for the crime at this point in your investigation?
- Why could the suspect have not been someone else?
- What is an issue in this case?
- What are some key factors to consider while solving this case?
- What additional information do you need to figure out in order to solve this case?

Elaborate —*Allow students to use their new knowledge and continue to explore its implications. At this stage students expand on the concepts they have learned, make connections to other related concepts, and apply their understandings to the world around them in new ways*

IDEA FINDING: Now, students will go back to their investigation and continue to look at their evidence and given information. As they are solving they will look to see if there is evidence that points to someone else being the culprit. They will refine their evidence and try to solve their case. (Question 4 in their CSI Journal- “After reevaluating your evidence, has your theory changed at all? Has the suspect? Why or why not?”)

SOLUTION FINDING: Students will now start preparing to present their findings to their classmates and the Chief of Police. They will need to show and explain all their evidence. Students will then need to make a matrix. They will generate questions in the matrix about their investigation that can be answered with yes or no questions. (Ex: Was Walter Bunk’s hair found at the scene of the crime?) (Question 5 in their CSI journal - “You will need to generate questions in a matrix about their investigation that can be answered with yes or no questions”)

Evaluate: *This phase assesses both learning and teaching and can use a wide variety of informal and formal assessment strategies.*

ACCEPTANCE FINDING: Students will then present their findings to classmates and the Chief of Police. Students will show and explain their findings. They may choose to present their findings however they would like, whether it is a powerpoint, a large board, etc. As students are presenting, the students will be completing a matrix on the solutions the other groups found. (Question 6 in their CSI Journal- “After you have solved your case, you will need to think about how you want to present your findings to your classmates and chief of police. In your report make sure to include the following: 1) Evidence from the crime scene that supports your theory 2) Information gained from suspects 3) Who committed the crime and how. You may present the information however your group decides.) (Facet: Explain--Students will need to explain/prove who the perpetrator is and what evidence proves they committed the crime. Facet: Perspective--Students will be giving presentations and students will have to listen to how different groups interpreted the evidence and how they may have come to a different conclusion.)

After all groups have presented the teacher will ask the following questions:

- Who do you believe is responsible for the murder?
- What investigating skills did you need to use in order to investigate this crime?
- How did you use collaboration in order to investigate this crime?
- What conflicts, if any, arrived during your collaboration? How did you work through them?
- What is the relationship between investigation and collaboration at a crime scene?
- What did you consider as you worked to develop a suspect for the crime?
- What worked well in the problem-solving process?
- What is something you would have done better?

- How can you use this experience to respond to the following question, How does investigation encourage collaboration?

Once all groups have finished. Students will answer the following question independently. “ How does investigation encourage collaboration? ” (Question number 7 in their CSI Journal). Then students will complete a rubric on how their teammates collaborated within the group.

Student Collaboration Survey (Each team member will do the survey on their team)

	Inadequate- 1 Points	Developing- 2 Point	Satisfactory- 3 Points
Focus on Task	Rarely focuses on the task and what needs to be done. Lets others do the work.	Focuses on the task and what needs to be done most of the time. Other members sometimes need to remind this person to keep on task.	Consistently stay focused on the task and what needs to be done. Other group members can count on this person.
Working with Others	Rarely listens to, shares with, or supports the efforts of others. Often is not a good team player.	Usually listens to, shares with, and supports the efforts of others. Tries to not cause trouble within the group.	Listens to, shares with, and supports the efforts of others. Tries to keep people working well together.
Creative Problem- Solving	Does not try to solve problems or help others solve problems. Lets others do the work	Refines solutions suggested by others.	Actively looks for and suggests solutions to problems.
Contribution	Rarely provides useful ideas when participating in the group. May not participate.	Sometimes provides useful ideas when participating in the group. A good group member who does what is required.	Routinely provides useful ideas when participating in a group. A strong group member who works hard.

RESOURCES:

TASK FOR STUDENTS

Last night Durham County Police officers were called to the scene of a crime when a home was broken into and the resident of the house was murdered. By the time the police arrived the perpetrator had fled the scene. The back door to the house had a window in it, which was broken. The police believe this is where the burglar entered the house. The victim was found in his bedroom with a deep wound in his chest. There was no murder weapon found at the scene. After talking with neighbors, family, and friends the police were able to narrow the potential suspects down to 4. They want the murder solved quickly, which is why the Durham Chief of Police has called your team of scientists to do the job.

The chief of police wants you to investigate the crime scene with your most capable forensic scientists and investigators. The team has been asked to collect and examine evidence from the crime scene. The Chief of police has informed your team that you are able to interview the suspects and eyewitnesses to ask them any questions that may help you to solve the case quickly.

After you have solved the crime, you will present the case to the Chief of Police and other fellow investigators. You will need to present evidence from the crime scene, information you gained from the suspects, and explain how that information will get a guilty verdict in front of a judge. This is a very important case and the Chief of Police is counting on your team of investigators in order to solve the murder.

****The police report is attached for your team to go over information that has already been collected by the police officers.****

POLICE REPORT

The Victim

Name: Levi Gregg

Estimated Time of Death: between the hours of 6-9 pm on September 23rd

Place of Death: 1234 Hudson Ave Durham , NC

Levi Gregg was a loving husband and was married to Simone for 8 years. He was working as a CEO of Ping insurance until his untimely death. Levi worked long hours, but enjoyed his job. When he wasn't working he was seen spending time with his wife. He was found at 9:30 PM by the police officers on the night of September 23rd and an anonymous person called 911 to report the crime.

Suspects & Eye Witnesses

The Wife, 32

Name: Simone Gregg

Hair Color: brown

Height: 5'7

Simone Gregg has been married to Levi Gregg for 8 years. They met in college and were married after they graduated college. Simone says that they had their ups and downs, but were happy together. However, we know from another source that the couple is in marriage counseling. Simone explained that Levi worked a lot and that he had been having trouble at work recently with his boss. She said that the business was failing and that Charlie wanted to sell the business, but Levi wouldn't allow it. On the night in question Simone was at her friend Kima's house. Simone says she was there until 11 PM and never left Kima's house.

The Neighbor, 67

Name: Walter Bunk

Hair Color: Black

Height: 6'

Walter Bunk has lived in his current house of 1234 Hudson Ave for over 15 years and said that the Gregg's have lived in their current house for the past 4 years. Mr. Bunk claims that the couple always appeared friendly, however on many occasions he did hear yelling and arguing coming from the house. On the night in question, Mr. Bunk said that he was home all night with his wife and at around 7 PM he heard yelling coming from the house, but figured it was the couple having an argument again. However, he said he did see a figure running down the street after the yelling stopped.

The Friend, 36

Name: Kima George

Hair Color: Blonde
Height: 5'11

Kima George has been friends with Simone since highschool and friends with Levi since college. Kima has explained that once Simone and Levi started dating, they were inseparable. Kima said that Simone and Levi have the perfect life on the outside, but that they have their share of issues. Currently money had been tight for the couple, because Levi would keep spending it on anything that he wanted to get. Kima explains that they have been doing a lot better since they have been going to marriage counseling and started addressing the money issues. On the night in question, Kima said that Simone was at her house and only left once for about 40 minutes to go get food, which she thinks was around 7 PM.

The Colleague, 43

Name: Charlie King
Hair Color: Black
Height: 5'9

Charlie King had been in business with Levi Gregg for the past 4 years, since the couple had moved to the town. Mr. Gregg was transferred from another office of Ping Insurance and took over the CEO position. Mr. King said that he and Levi got along well up until recently. The insurance company was losing business rapidly and Mr. King wanted to sell the business, however Levi did not. They were at odds during work and always ended up arguing about what they should do with the company. On the night in question Mr. King was eating at a restaurant with his girlfriend, however we have not been able to reach the girlfriend to corroborate his story.

Rubric

	Inadequate- 1 Points	Developing- 2 Point	Satisfactory- 3 Points
Collaboration & Communication (based on team survey)	The student did not adequately work together in order to solve the crime.	The student collaborated with their team for the most part, but did not help the team in coming to conclusion of the murder.	The student was able to collaborate with their forensic team in order to come to a conclusion about the crime.
Questioning	The student was not able to come up with questions to ask the "suspects"	The student had questions, but they didn't necessarily relate back to the crime scene.	The student had deep and thought provoking questions that related back to the evidence.
Evidence Collection	The student did not adequately collect evidence from the crime scene.	The student was able to collect some evidence and ask some questions about the crime.	The student was able to collect evidence from the crime scene and ask questions pertaining to the crime scene.
Investigative Skills	The students' investigation skills do not show synthesis of how	The students investigated the crime but were unable to fully	The student was able to investigate the crime with their team members and

	the evidence connected to the crime.	synthesize how the suspect was guilty.	were able to synthesize the information found.
Presentation	The student did not present or the presentation was not completed.	The student presented their findings but did not explain how the evidence was linked to the suspect.	The student presented their findings from the crime scene and fully explained how the evidence was linked to the suspect.

Student Collaboration Survey (Each team member will do the survey on their team)

	Inadequate- 1 Points	Developing- 2 Point	Satisfactory- 3 Points
Focus on Task	Consistently stay focused on the task and what needs to be done. Other group members can count on this person.	Focuses on the task and what needs to be done most of the time. Other members sometimes need to remind this person to keep on task.	Rarely focuses on the task and what needs to be done. Lets others do the work.
Working with Others	Listens to, shares with, and supports the efforts of others. Tries to keep people working well together.	Usually listens to, shares with, and supports the efforts of others. Tries to not cause trouble within the group.	Rarely listens to, shares with, or supports the efforts of others. Often is not a good team player.
Creative Problem-Solving	Actively looks for and suggests solutions to problems.	Refines solutions suggested by other	Does not try to solve problems or help others solve problems. Lets others do the work.
Contribution	Routinely provides useful ideas when participating in a group. A strong group member who works hard.	Sometimes provides useful ideas when participating in the group. A good group member who does what is required.	Rarely provides useful ideas when participating in the group. May not participate.

CSI JOURNAL:

Crime Scene Investigation:

1. What important information have you been able to find during the investigation? List as many ideas as you can.

2. What questions do you have about the crime scene, the suspects, or the victim? Write down as many questions as you can.

3. At this point in your investigation, who do you think committed the murder? Why? What evidence supports your theory?

4. After reevaluating your evidence, has your theory changed at all? Has the suspect? Why or why not?

5. You will need to generate questions in a matrix about their investigation that can be answered with yes or no questions.

6. After you have solved your case, you will need to think about how you want to present your findings to your classmates and chief of police. In your report make sure to include the following:

- Evidence from the crime scene that supports your theory
- Information gained from suspects
- Who committed the crime and how

You may present the information however your group decides.

7. Explain in your own words “How does investigation encourage collaboration”?

References Used to Create Unit

WEBSITES

- **Fingerprints and Pattern Evidence:**
Robin.materese@nist.gov. (2020, May 27). *Fingerprints and pattern evidence*.
<https://www.nist.gov/topics/fingerprints-and-pattern-evidence>.
 - This website gives information about fingerprints and pattern evidence that is used to help solve crimes. This website has a scientific staff that helps to write the articles.
- **“How Crime Scene Investigation Works” by Julia Layton**
Layton, J. (2020, June 30). *How Crime Scene Investigation Works*. HowStuffWorks Science. <https://science.howstuffworks.com/csi.htm>.
 - This website explains how crime scenes investigation and it goes into an in depth process of what the forensic scientist will do.
- **How Police Sketches Work**
Conger, C. (2011, May 16). *How Police Sketches Work*. HowStuffWorks.
<https://people.howstuffworks.com/police-sketch.htm>.
 - The website explains how there is a field of forensic scientists that specialize in creating police sketches. It explains the process of how the sketch artist creates a piece.
- **YOUTUBE: Forensic Scientist** (<https://youtu.be/qESpv6bqBuU>)
 - This video explains what a forensic scientist is and what they do within their field of study.
- **YOUTUBE: What Does it Take to be a Forensic Scientist**
(<https://youtu.be/uOV0spSo0BI>)
 - This video explains what type of schooling and skills you will need in order to become a forensic scientist.
- **YOUTUBE: What Does a Forensic Science Technician do?**
<https://youtu.be/XGlgoNCz9Ow>
 - This video explains the different things forensic scientists will do, such as performing tests on weapons or taking swabs of materials.
- **YOUTUBE: Forensic Experts Examine Crime Scene Investigations from Film & TV**
<https://youtu.be/xJcNa2-jprs> (1:47-6:50)
 - This video has a forensic scientist who is watching clips of tv shows to analyze how accurate the forensic science is on the show.
- **YOUTUBE: Crime Scene Investigation Techniques** (<https://youtu.be/tqtS4wMfZY0>)
 - This video explains the steps forensic scientists take in order to investigate a crime scene.
- **YOUTUBE: 8 Detective Riddles that Will Test Your Logic Skills**
(<https://youtu.be/IrmsHzNTSZ0>)

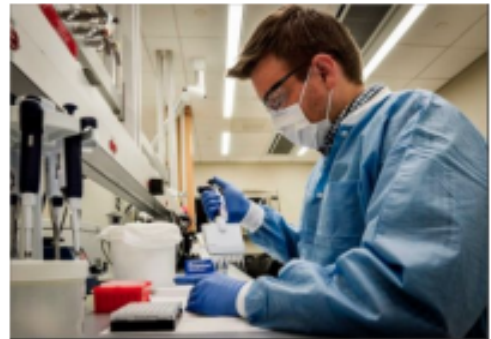
- This video has riddles that the students will try to solve.

Student & Teacher Unit Resources

Lesson One

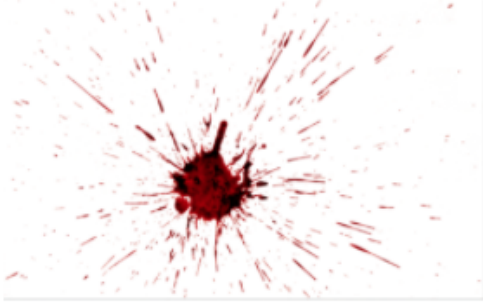
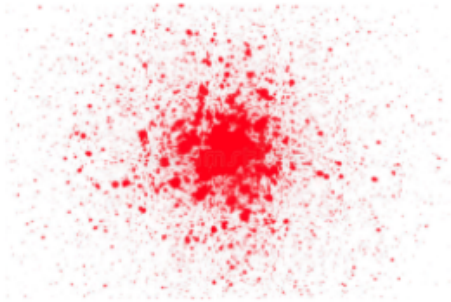
Pictures for PowerPoints





Centers for students to do during EXPLORE

1. Blood Spatter Center

Blood Spatter from a Hammer  A photograph showing a dense, circular cluster of red blood spatter with many fine, radiating lines extending outwards, characteristic of a hammer strike.	Blood Spatter from Knife  A photograph showing a series of red blood spatter marks arranged in a horizontal line, with some larger, more distinct droplets, characteristic of a knife wound.
Blood Spatter from Gunshot  A photograph showing a large, dense, circular cloud of red blood spatter, with many fine droplets radiating outwards, characteristic of a gunshot wound.	Blood Sample From the House  A photograph showing a series of red blood spatter marks arranged in a horizontal line, with some larger, more distinct droplets, characteristic of a blood sample from a house.

2. Footprint Center

Finding Height from a Footprint

In order to find the height of the suspect by looking at the shoeprint, you must do the following:

1. Measure the length of the shoeprint
2. Multiply that number by 100
3. Then divide the previous answer by 15



3. Fingerprint Analysis Center

Fingerprints of Suspects

Sample A



Sample B



Sample C



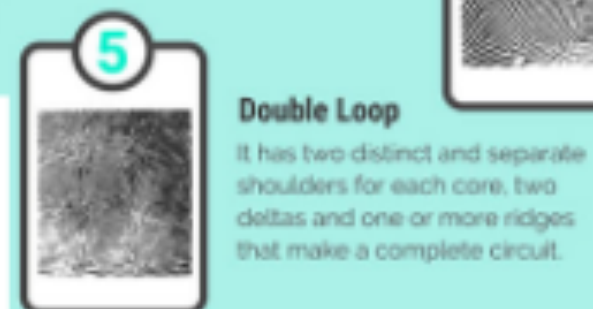
Fingerprint from the House



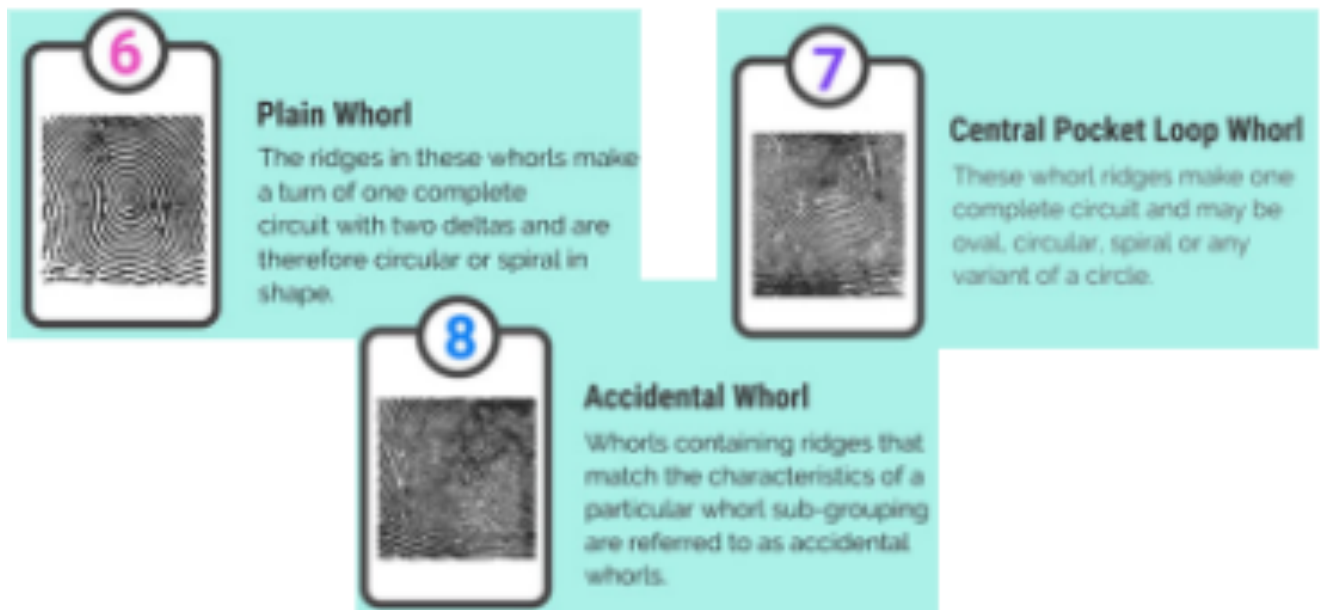
Arches: These occur in about 5% of the encountered fingerprints. The ridges of the finger run continuously from one side of the finger to the other and make no backward turn. Normally, there is no delta in an arch pattern but if it exists, there must be no re-curving ridge that intervenes between the core and delta points.



Loops: These can be seen in almost 60 to 70% of the fingerprints that are encountered. The ridges make a backward turn in loops but they do not twist. This backward turn or loop is distinguished by how the loop flows on the hand and not by how the loop flows on the card where the imprint is taken. This imprint on the fingerprint is similar to the reverse image that we see when we look at ourselves in the mirror. A loop pattern has only one delta



Whorls: These can be found in about 25 to 35% of the fingerprints that are encountered. Some of the ridges in a whorl make a turn through at least one circuit. Therefore any pattern that contains two or more deltas will be a whorl.



4. Hair Analysis Center

Papers for Hair Analysis Center

Will place a piece of hair that is the sample from the home. Along with the samples from the three suspects.

Papers to Give to Students

The Crime

Mrs. Kelley found her husband murdered in their house early one morning with a deep puncture wound. She quickly called 911 in order for the police to look at the scene of the crime. There did not appear to be a forced entry into the home. There was no weapon found and only one witness of the crime. However through investigation of the witness, friends, and family, the detectives were able to narrow the case down to 3 key suspects. A businessman (Mr. Jones), his wife (Mrs. Kelley), or his best friend (Mr. Kern). The forensic scientists have collected the data from the crime scene. The scientists need your help comparing the data collected at the crime scene to the 3 suspects in order to figure out who committed the crime. You must figure out who committed the crime and with what weapon.

The Suspects

Suspect #1	Suspect #2	Suspect #3
Name: Mr. Jones Hair Color: Black Height: 72 in Fingerprint: Sample C Important Fact: Owned Hardware Store	Name: Mrs. Kelley Hair Color: Reddish Brown Height: 67 in Fingerprint: Sample A Important Fact: Missing Knife from their home	Name: Mr. Kern Hair Color: Light Brown Shoe Size: 74 in Fingerprint: Sample B Important Fact: Works with tools in construction
Reason to Suspect: Mr. Kelley was his enemy; he had destroyed Mr. Jones business by stealing all of his customers. Was seen arguing with Mr. Kelley on the day the crime was committed.	Reason to Suspect: She was in the home. Claims she heard Mr. Kelly come home late in the evening. She was not happy with her husband. Mrs. Kelly was a short tempered and a quarrelsome person.	Reason to Suspect: Spent the evening at a restaurant with Mr. Kelley. He never showed up for his job the next day and is considered a missing person of interest.

Oath for the Graphic Organizer

Oath Graphic Organizer

Evaluate what level of critical thinking was used in each oath. Based on your evaluation, which oath reflects the most inclusive and accurate view of what a scientist does.

Rate each criteria by determining at which level the authors use each area of critical thinking and inquiry. Mark the box which best describes to what degree each criteria was evaluated.

Criteria	Identify	Explain	Apply	Analyze
Responsibilities and Attributes of a Forensic Scientist				
Professionalism of a Forensic Scientist				
Behavior of a Forensic Scientist				
Obligation of a Forensic Scientist				
Choice of Oath				
Justify your choice of an Oath for a Forensic Scientist				

Lesson Two

Page for engage and connect

QUESTION	RESPONSE	JUSTIFICATION
What questions did you have while you were watching the videos?		
What have you learned about real life crime scenes and those that are seen on tv?		
How do csi collaborate with other people during an investigation?		
How is collaboration used during a case?		

Pages that will be used during socratic seminar

AVID Socratic Seminar Questions

Opening Questions (Level 1)	Core Questions (Level 2)	Closing (Level 3)
• Relates to text • Uses concrete examples • Open-ended • Is not a yes or no question	• Develops theme • Leads into the abstract • Leads to further questions	• Relates to self • Relates to reality
EXAMPLES • What does the author mean when he says... "with torn and bleeding hearts we smile?" • When do you wear a mask? • When do masks "grin and lie?" • What would make the author say "But let the world dream otherwise."	EXAMPLES • Is there a time when we can see below the mask people wear? • What is the purpose of wearing a mask? • What is your response to people who wear masks? • Can masks belie the wearer?	EXAMPLES • What do you think was the wisdom that the author was trying to impart to you? • What in your thinking has changed about the way you treat people who wear masks?

AVID Socratic Seminar Questions

Name: _____ Title of Seminar: _____ Date: _____

	Opening Questions (Level 1)	Core Questions (Level 2)	Closing Questions (Level 3)
1			
2			
3			
4			
5			

Reflections: _____

Observation Form
Inner-Outer Discussion Circle

Your Name:	Partner:																				
DIRECTIONS: Each time your partner does one of the following, put a check in the box.																					
SPEAKS IN THE DISCUSSION:																					
<table border="1" style="width: 100%; height: 20px; border-collapse: collapse;"> <tr> <td>☐</td><td>☐</td><td>☐</td><td>☐</td><td>☐</td><td>☐</td><td>☐</td><td>☐</td><td>☐</td><td>☐</td><td>☐</td><td>☐</td><td>☐</td><td>☐</td><td>☐</td><td>☐</td><td>☐</td><td>☐</td><td>☐</td><td>☐</td> </tr> </table>		☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐		
LOOKS AT THE PERSON WHO IS SPEAKING:																					
<table border="1" style="width: 100%; height: 20px; border-collapse: collapse;"> <tr> <td>☐</td><td>☐</td><td>☐</td><td>☐</td><td>☐</td><td>☐</td><td>☐</td><td>☐</td><td>☐</td><td>☐</td><td>☐</td><td>☐</td><td>☐</td><td>☐</td><td>☐</td><td>☐</td><td>☐</td><td>☐</td><td>☐</td><td>☐</td> </tr> </table>		☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐		
REFERS TO THE TEXT:																					
<table border="1" style="width: 100%; height: 20px; border-collapse: collapse;"> <tr> <td>☐</td><td>☐</td><td>☐</td><td>☐</td><td>☐</td><td>☐</td><td>☐</td><td>☐</td><td>☐</td><td>☐</td><td>☐</td><td>☐</td><td>☐</td><td>☐</td><td>☐</td><td>☐</td><td>☐</td><td>☐</td><td>☐</td><td>☐</td> </tr> </table>		☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐		
ASKS A QUESTION:																					
<table border="1" style="width: 100%; height: 20px; border-collapse: collapse;"> <tr> <td>☐</td><td>☐</td><td>☐</td><td>☐</td><td>☐</td><td>☐</td><td>☐</td><td>☐</td><td>☐</td><td>☐</td><td>☐</td><td>☐</td><td>☐</td><td>☐</td><td>☐</td><td>☐</td><td>☐</td><td>☐</td><td>☐</td><td>☐</td> </tr> </table>		☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐		
RESPONDS TO ANOTHER SPEAKER:																					
<table border="1" style="width: 100%; height: 20px; border-collapse: collapse;"> <tr> <td>☐</td><td>☐</td><td>☐</td><td>☐</td><td>☐</td><td>☐</td><td>☐</td><td>☐</td><td>☐</td><td>☐</td><td>☐</td><td>☐</td><td>☐</td><td>☐</td><td>☐</td><td>☐</td><td>☐</td><td>☐</td><td>☐</td><td>☐</td> </tr> </table>		☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐		
INTERRUPTS ANOTHER SPEAKER:																					
<table border="1" style="width: 100%; height: 20px; border-collapse: collapse;"> <tr> <td>☐</td><td>☐</td><td>☐</td><td>☐</td><td>☐</td><td>☐</td><td>☐</td><td>☐</td><td>☐</td><td>☐</td><td>☐</td><td>☐</td><td>☐</td><td>☐</td><td>☐</td><td>☐</td><td>☐</td><td>☐</td><td>☐</td><td>☐</td> </tr> </table>		☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐		
ENGAGES IN SIDE CONVERSATION:																					
<table border="1" style="width: 100%; height: 20px; border-collapse: collapse;"> <tr> <td>☐</td><td>☐</td><td>☐</td><td>☐</td><td>☐</td><td>☐</td><td>☐</td><td>☐</td><td>☐</td><td>☐</td><td>☐</td><td>☐</td><td>☐</td><td>☐</td><td>☐</td><td>☐</td><td>☐</td><td>☐</td><td>☐</td><td>☐</td> </tr> </table>		☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐		
AFTER DISCUSSION: What is the most interesting thing your partner said?																					
AFTER DISCUSSION: What would you like to have said in the discussion?																					

Socratic Seminar Debrief Page

Name: _____

1. How did you feel about the seminar?
2. Reflect on your own experience of the seminar.
3. If your opinion was changed during the seminar, what changed it?
4. Using your own knowledge on this topic, choose a question to start a new socratic seminar.
5. What was the best part of the seminar? The worst?
6. What was your overall opinion of the socratic seminar?
7. How does investigation encourage collaboration?

Close reading story as the example:

<https://science.howstuffworks.com/csi.htm> (only page 1)

How Crime Scene Investigation Works

On TV shows like "CSI," viewers get to watch as investigators find and collect evidence at the scene of a crime, making blood appear as if by magic and swabbing every mouth in the vicinity-. Many of us believe we have a pretty good grip on the process, and rumor has it criminals are getting a jump on the good guys using tips they pick up from these shows about forensics.

But does Hollywood get it right? Do crime scene investigators follow their DNA samples into the lab? Do they interview suspects and catch the bad guys, or is their job all about collecting physical evidence? In this article, we'll examine what really goes on when a CSI "processes a crime scene" and get a real-world view of crime scene investigation from a primary scene responder with the Colorado Bureau of Investigation.

CSI Basics

-Crime scene investigation is the meeting point of science, logic and law. "Processing a crime scene" is a long, tedious process that involves purposeful documentation of the conditions at the scene and the collection of any physical evidence that could possibly illuminate what happened and point to who did it. There is no typical crime scene, there is no typical body of evidence and there is no typical investigative approach.

At any given crime scene, a CSI might collect dried blood from a windowpane — without letting his arm brush the glass in case there are any latent fingerprints there, lift hair off a victim's jacket using tweezers so he doesn't disturb the fabric enough to shake off any of the white powder (which may or may not be cocaine) in the folds of the sleeve, and use a sledge hammer to break through a wall that seems to be the point of origin for a terrible smell.

All the while, the physical evidence itself is only part of the equation. The ultimate goal is the conviction of the perpetrator of the crime. So while the CSI scrapes off the dried blood without smearing any prints, lifts several hairs without disturbing any trace evidence and smashes through a wall in the living room, he's considering all of the necessary steps to preserve the evidence in its current form, what the lab can do with this evidence in order to reconstruct the

crime or identify the criminal, and the legal issues involved in making sure this evidence is admissible in court.

The investigation of a crime scene begins when the CSI unit receives a call from the police officers or detectives on the scene. The overall system works something like this:

- The CSI arrives on the scene and makes sure it is secure. She does an initial walk-through to get an overall feel for the crime scene, finds out if anyone moved anything before she arrived, and generates initial theories based on visual examination. She makes note of potential evidence. At this point, she touches nothing.
- The CSI thoroughly documents the scene by taking photographs and drawing sketches during a second walk-through. Sometimes, the documentation stage includes a video walk-through, as well. She documents the scene as a whole and documents anything she has identified as evidence. She still touches nothing.
- Now it's time to touch stuff — very, very carefully. The CSI systematically makes her way through the scene collecting all potential evidence, tagging it, logging it and packaging it so it remains intact on its way to the lab. Depending on the task breakdown of the CSI unit she works for and her areas of expertise, she may or may not analyze the evidence in the lab.
- The crime lab processes all of the evidence the CSI collected at the crime scene. When the lab results are in, they go to the lead detective on the case.

Every CSI unit handles the division between field work and lab work differently. What goes on at the crime scene is called crime scene investigation (or crime scene analysis), and what goes on in the laboratory is called forensic science. Not all CSIs are forensic scientists. Some CSIs only work in the field — they collect the evidence and then pass it to the forensics lab. In this case, the CSI must still possess a good understanding of forensic science in order to recognize the specific value of various types of evidence in the field. But in many cases, these jobs overlap.

Joe Clayton is a primary crime scene responder at the Colorado Bureau of Investigation (CBI). He has 14 years of field experience and also is an expert in certain areas of forensic science. As Clayton explains, his role in laboratory analysis varies according to the type of evidence he brings back from the crime scene:

- "Depending on what scientific examinations are needed or requested, I may be involved in the actual "bench work" once the evidence is submitted to the laboratory. I have expertise in blood pattern identification (blood spatter), trajectory determination, serology (blood and body fluids), and photography. I also have knowledge in many other areas (firearms, fingerprints, questioned documents...) that may assist me at the scene. As a primary crime scene responder at the CBI, my role at the scene may involve one or more of my particular disciplines. While I would not do a functionality test on a firearm here at the laboratory, my role at the crime scene would be to collect the gun and understand its potential evidentiary significance."

Story students will read for socratic seminar:

<https://science.howstuffworks.com/csi.htm> (only page 5)

How Crime Scene Investigation Works: Evidence Collection

In -collecting evidence from a crime scene, the CSI has several main goals in mind: Reconstruct the crime, identify the person who did it, preserve the evidence for analysis and collect it in a way that will make it stand up in court.

Trace Evidence

Trace evidence might include gun-shot residue (GSR), paint residue, chemicals, glass and illicit drugs. To collect trace evidence, a CSI might use tweezers, plastic containers with lids, a filtered vacuum device and a knife. He will also have a biohazard kit on hand containing disposable latex gloves, booties, face mask and gown and a biohazard waste bag.

If the crime involves a gun, the CSI will collect clothing from the victim and anyone who may have been at the scene so the lab can test for GSR. GSR on the victim can indicate a close shot, and GSR on anyone else can indicate a suspect. The CSI places all clothing in sealed paper bags for transport to the lab. If he finds any illicit drugs or unknown powders at the scene, he can collect them using a knife and then seal each sample in a separate, sterile container. The lab can identify the substance, determine its purity and see what else is in the sample in trace amounts. These tests might determine drug possession, drug tampering or whether the composition could have killed or incapacitated a victim.

Technicians discover a lot of the trace evidence for a crime in the lab when they shake out bedding, clothing, towels, couch cushions and other items found at the scene. At the CBI Denver Crime Lab, technicians shake out the items in a sterile room, onto a large, white slab covered with paper.

The technicians then send any trace evidence they find to the appropriate department. In the Denver Crime Lab, things like soil, glass and paint stay in the trace-evidence lab, illicit drugs and unknown substances go to the chemistry lab, and hair goes to the DNA lab.

Body Fluids

Body fluids found at a crime scene might include blood, semen, saliva, and vomit. To identify and collect these pieces of evidence, a CSI might use smear slides, a scalpel, tweezers, scissors, sterile cloth squares, a UV light, protective eyewear and [luminol](#). He'll also use a blood collection kit to get samples from any suspects or from a living victim to use for comparison.

If the victim is dead and there is blood on the body, the CSI collects a blood sample either by submitting a piece of clothing or by using a sterile cloth square and a small amount of distilled water to remove some blood from the body. Blood or saliva collected from the body may belong to someone else, and the lab will perform DNA analysis so the sample can be used later to compare to blood or saliva taken from a suspect. The CSI will also scrape the victim's nails for skin -- if there was a struggle, the suspect's skin (and therefore DNA) may be under the victim's nails. If there is dried blood on any furniture at the scene, the CSI will try to send the entire piece of furniture to the lab. A couch is not an uncommon piece of evidence to collect. If the blood is on something that can't reasonably go to the lab, like a wall or a bathtub, the CSI can collect it by scraping it into a sterile container using a scalpel. The CSI may also use [luminol](#) and a portable UV light to reveal blood that has been washed off a surface.

If there is blood at the scene, there may also be blood spatter patterns. These patterns can reveal the type of weapon that was used -- for instance, a "cast-off pattern" is left when something like a baseball bat contacts a blood source and then swings back. The droplets are large and often tear-drop shaped. This type of pattern can indicate multiple blows from a blunt object, because the first blow typically does not contact any blood. A "high-energy pattern," on the other hand, is made up of many tiny droplets and may indicate a gun shot. Blood spatter analysis can indicate which direction the blood came from and how many separate incidents created the pattern. Analyzing a blood pattern involves studying the size and shape of the stain, the shape and size of the blood droplets and the concentration of the droplets within the pattern. The CSI takes pictures of the pattern and may call in a blood-spatter specialist to analyze it.

Hair and Fibers

A CSI may use combs, tweezers, containers and a filtered vacuum device to collect any hair or fibers at the scene. In a rape case with a live victim, the CSI accompanies the victim to the hospital to obtain any hairs or fibers found on the victim's body during the medical examination. The CSI seals any hair or fiber evidence in separate containers for transport to the lab.

A CSI might recover carpet fibers from a suspect's shoes. The lab can compare these fibers to carpet fibers from the victim's home. Analysts can use hair DNA to identify or eliminate suspects by comparison. The presence of hair on a tool or weapon can identify it as the weapon used in the crime. The crime lab can determine what type of animal the hair came from (human? dog? cow?); and, if it's human, analysts can determine the person's race, what part of the body the hair came from, whether it fell out or was pulled and whether it was dyed.

Fingerprints

Tools for recovering fingerprints include brushes, powders, tape, chemicals, lift cards, a magnifying glass and Super Glue. A crime lab can use fingerprints to identify the victim or identify or rule out a suspect. There are several types of prints a CSI might find at a crime scene:

- **Visible:** Left by the transfer of blood, paint or another fluid or powder onto a surface that is smooth enough to hold the print; evident to the naked eye
- **Molded:** Left in a soft medium like soap, putty or candle wax, forming an impression
- **Latent:** Left by the transfer of sweat and natural oils from the fingers onto a surface that is smooth enough to hold the print; not visible to the naked eye

A perpetrator might leave prints on porous or nonporous surfaces. Paper, unfinished wood and cardboard are porous surfaces that will hold a print, and glass, plastic and metal are nonporous surfaces. A CSI will typically look for latent prints on surfaces the perpetrator is likely to have touched. For instance, if there are signs of forced entry on the front door, the outside door knob and door surface are logical places to look for prints. Breathing on a surface or shining a very strong light on it might make a latent print temporarily visible. When you see a TV detective turn a doorknob using a handkerchief, she's probably destroying a latent print. The only way not to corrupt a latent print on a nonporous surface is to not touch it. Proper methods for recovering latent prints include:

- **Powder** (for nonporous surfaces): Metallic silver powder or velvet black powder A CSI uses whichever powder contrasts most with the color of material holding the print. He gently brushes powder onto the surface in a circular motion until a print is visible; then he starts brushing in the direction of the print ridges. He takes a photo of the print before using tape to lift it (this makes it stand up better in court). He adheres clear tape to the

powdered print, draws it back in a smooth motion and then adheres it to a fingerprint card of a contrasting color to the powder.

- **Chemicals** (for porous surfaces): Iodine, ninhydrin, silver nitrate The CSI sprays the chemical onto the surface of the material or dips the material into a chemical solution to reveal the latent print.
- **Cyanoacrylate** (Super Glue) fuming (for porous or nonporous surfaces) The CSI pours Super Glue into a metal plate and heats it to about 120 F. He then places the plate, the heat source and the object containing the latent print in an airtight container. The fumes from the Super Glue make the latent print visible without disturbing the material it's on.

Footwear Impressions and Tool Marks

A latent fingerprint is an example of a two-dimensional impression. A footwear impression in mud or a tool mark on a window frame is an example of a three-dimensional impression. If it's not possible to submit the entire object containing the impression to the crime lab, a CSI makes a casting at the scene.

A casting kit might include multiple casting compounds (dental gypsum, Silicone rubber), snow wax (for making a cast in snow), a bowl, a spatula and cardboard boxes to hold the casts.

If a CSI finds a footwear impression in mud, she'll photograph it and then make a cast. To prepare the casting material, she combines a casting material and water in a Ziploc-type bag and kneads it for about two minutes, until the consistency is like pancake batter. She then pours the mixture into the edge of the track so that it flows into the impression without causing air bubbles. Once the material overflows the impression, she lets it set for at least 30 minutes and then carefully lifts the cast out of the mud. Without cleaning the cast or brushing anything off it (this would destroy any trace evidence), she puts the cast into a cardboard box or paper bag for transport to the lab.

For toolmark impressions, a cast is much harder to use for comparison than it is with footwear. If it's not feasible to transport the entire item containing the tool mark, a CSI can make a silicone-rubber cast and hope for the best. There are two types of tool marks a CSI might find at a crime scene:

- **Impressed:** A hard object contacts a softer object without moving back and forth (for example, a hammer mark on a door frame). The tool mark is an impression of the tool's shape. It's difficult to make a definite match with an impressed tool mark.
- **Striated:** A hard object contacts a softer object and moves back and forth (for example, pry marks on a window frame). The tool mark is a series of parallel lines. It's easier to make a definite match with a striated tool mark.

-In toolmark analysis, the lab might determine what sort of tool made the mark and whether a tool in evidence is the tool that made it. It can also compare the tool mark in evidence to another toolmark to determine if the marks were made by the same tool.

Firearms

If a CSI finds any firearms, bullets or casings at the scene, she puts gloves on, picks up the gun by the barrel (not the grip) and bags everything separately for the lab. Forensic scientists can recover serial numbers and match both bullets and casings not only to the weapon they were fired from, but also to bullets and casings found at other crime scenes throughout the state (most ballistics databases are statewide). When there are bullet holes in the victim or in other objects at the scene, specialists can determine where and from what height the bullet was fired from, as well as the position of the victim when it was fired, using a laser trajectory kit. If there are bullets embedded in a wall or door frame, the CSI cuts out the portion of the wall or frame containing the bullet -- digging the bullet out can damage it and make it unsuitable for comparison.

Documents

A CSI collects and preserves any diaries, planners, phone books or suicide notes found at a crime scene. He also delivers to the lab any signed contracts, receipts, a torn up letter in the trash or any other written, typed or photocopied evidence that might be related to the crime. A documents lab can often reconstruct a destroyed document, even one that has been burned, as well as determine if a document has been altered. Technicians analyze documents for forgery, determine handwriting matches to the victim and suspects, and identify what type of machine was used to produce the document. They can rule out a printer or photocopier found at the

scene or determine compatibility or incompatibility with a machine found in a suspect's possession.

Whenever a CSI discovers a piece of evidence at the scene, she photographs it, logs it, -recovers it and tags it. An evidence tag may include identification information such as time, date and exact location of recovery and who recovered the item, or it may simply reflect a serial number that corresponds to an entry in the evidence log that contains this information. The crime scene report documents the complete body of evidence recovered from the scene, including the photo log, evidence recovery log and a written report describing the crime scene investigation.

Lesson Three

<https://people.howstuffworks.com/police-sketch.htm>

How Police Sketches Work

In the 1880s, French criminologist Alphonse Bertillon developed a particular obsession with itemizing physical characteristics of [prisoners](#) brought in to the Paris police station where he started out as a records clerk [source: [National Library of Medicine](#)]. Bertillon painstakingly measured prisoners' arm lengths, head circumferences, ear formations and other anatomical markers; made notes of [tattoos](#) and scars; and photographed their facial frontals and profiles. As he amassed this data, Bertillon developed a novel system for identifying inmates, which became known as criminal anthropometry. After French police used Bertillon's identification practices to nab 241 repeat offenders in 1884 alone, this early [forensics science](#) spread to other police departments around Europe and the United States [source: [National Library of Medicine](#)]. Today, one of the most commonly employed anthropometry tactics that hasn't changed all that much during the intervening century is the police sketch.

The [FBI](#) cites an [eye witness](#) sketch of Timothy McVeigh as a crucial piece of evidence that eventually brought the mastermind of the Oklahoma City bombing to justice. Ten hours after the 1995 explosion at the Alfred P. Murrah Federal Building that killed 168 people, a forensic artist with the FBI's Investigative and Prosecutive Graphic Unit sketched out the perpetrator's face based on interviews with people who had spotted McVeigh in Junction City, Kan. renting a truck that was later found at the crime scene [source: [FBI](#)]. Having seen that relatively rudimentary FBI sketch, Oklahoma State Troopers who later arrested McVeigh on driving- and weapon-related charges unrelated to the bombing didn't release their suspicious-looking prisoner from jail.

Although the McVeigh case is an extraordinary example of a suspect sketch helping successfully nab a criminal on the lam, police sketches are nevertheless a routine part of law enforcement investigations. A forensic artist, who might double as a patrol officer or serve as a civilian contractor, usually interviews crime scene witnesses and victims about a perpetrator's appearance to create a composite sketch. The composite could be drawn completely by hand or computer generated. Sometimes, forensic artists use a combination of the two methods.

But no matter how fine-tuned the police sketch methodology, the most crucial component of an accurate facial composite is an eye witness' memory. Describing the face of someone who might have fled a crime scene or inflicted bodily harm on you might be an erroneous process. The human memory can play tricks, erasing certain details and amplifying others, for instance giving someone a beard when he had a

mustache or a square jaw when it was actually rounded [source: [Raeburn](#)]. And for that reason, forensic artists must conduct preliminary interviews carefully and with sensitivity to elicit as many precise facial details as possible.

Gathering Clues

Before forensic artists can begin composing police sketches, they obviously need an idea of what their subjects look like. For that reason, the eyewitness interview is the most important step in the police sketch process [source: [Taister](#)]. Officers or artists doing the questioning need to understand what to ask and how to approach interviewees to cull the most accurate information, since the [human memory](#) for faces can be easily fooled. Often, people have a difficult time recalling specific facial features, and the more time that lapses between a crime and the police sketch interview, the fuzzier those memories become [source: [Raeburn](#)].

Depending on the crime and the person being interviewed, police sketch sit-downs can last hours. To get an idea of how these question-and-answer sessions are conducted, consider a 2007 study examining people's ability to describe faces for creating forensics facial composites. It broke down the cognitive interview into three phases: rapport building, free recall and cued recall [source: [Frowd et al.](#)].

Rapport building simply involves casual conversation -- "Hi, how are you?" -- in an effort to relax the interviewee. Next, the interviewee is asked to recall as many specific details about the criminal as possible. Often, participants begin by discussing hair and general face shape [source: [Frowd et al.](#)]. During the last step, cued recall, the forensic artist will ask the interviewee about any defining features they don't immediately remember. At that point, it might be helpful to jog the interviewee's memory with mug shots of previously incarcerated criminals. That way, seeing a similar nose or eyes or jaw line might spark a flashback. Forensic artists may also keep a catalog of celebrity portraits around since the famous faces can spark visual cues as well [source: [Raeburn](#)].

While forensic artists keenly focus on minute facial features, former New York Police Department artist Stephen Manusci notes that victims are more apt to provide broader descriptions, such as a "horse face" or "bug eyes" [source: [Lichtman](#)]. The role of an adept artist is to break down, or "decode," those vague generalizations into a collection of discrete facial characteristics. That doesn't mean the forensic artist should ever drill someone for more characteristics; pressuring the interviewee might stifle, rather than stimulate his memory [source: [Muench](#)]. As the sketch takes shape, interviewees will also begin to either show recognition or point out discrepancies.

Portrait of a Criminal

Drawing a police sketch by hand clearly requires a degree of artist talent, but it doesn't necessarily demand a degree from art school. Depending on the size of the police department, forensic artists may or may not be full-time employees. In small-town departments, a patrol officer with a knack for drawing may actually volunteer for the role, while larger, better-funded agencies may employ civilians formally trained at the [FBI's](#) forensic facial imaging laboratory or other forensic art training programs [source: [Echaore-McDavid and McDavid](#)].

The police sketching process also varies by forensic artist. For instance, former NYPD forensic artist Stephen Manusci takes the old school pencil and paper route, refining the face as needed with input from victims or eyewitnesses [source: [Lichtman](#)]. Roderick Scratchard, forensic artist with the Philadelphia Police Department, takes the opposite route. First, he creates a computer-generated composite based on photos of faces and features that interviewees have selected. Then, he draws the final police sketch by hand based on that computer composite, tweaking the appearance as requested [source: [Avril](#)].

Computers have played a role in police sketches since the 1960s, with the arrival of the identi-Kit composite software. Police departments without the resources to retain a bona fide forensic artist could instead purchase identi-Kit -- and now a host of other programs -- to automatically generate facial composites by selecting from a gallery of profiles and traits. Reliance on computers has proven controversial, however, as studies have shown that hand-drawn police sketches often turn out more accurately than computer-only composites [source: [Avril](#)]. Newer programs do a better job at producing more nuanced mug shots. Harkening back to Bertillon's cross-indexing to pinpoint repeat offenders, a computer program developed at Michigan State University in 2011 digitally analyzes hand-drawn composites and compares them to photographed mug shots stored in law enforcement databases. Due to high recidivism rates, the highly publicized technology could help officers identify suspects more quickly. Nevertheless, the FBI isn't impressed by any technological advances. Due to the anecdotal accuracy, when it comes to the paper versus computer quandary, hand drawn composites are a must-have in the agency's book [source: [FBI](#)]. But whether a facial composite is drawn by a person or a computer, the question of whether it looks anything like the person who committed the crime remains sketchy.

Paper that will be given to students to grade generalizations

Generalization	What does the generalization say about the two concepts?	How does the generalization connect investigation and collaboration?	What makes this generalization strong?
----------------	--	--	--

1.			
2.			
3.			
4.			
5.			
6.			

Lesson Four

Rubric

	Inadequate- 1 Points	Developing- 2 Point	Satisfactory- 3 Points
Collaboration & Communication (based on team survey)	The student did not adequately work together in order to solve the crime.	The student collaborated with their team for the most part, but did not help the team in coming to conclusion of the murder.	The student was able to collaborate with their forensic team in order to come to a conclusion about the crime.
Questioning	The student was not able to come up with questions to ask the "suspects"	The student had questions, but they didn't necessarily relate back to the crime scene.	The student had deep and thought provoking questions that related back to the evidence.
Evidence Collection	The student did not adequately collect evidence from the crime scene.	The student was able to collect some evidence and ask some questions about the crime.	The student was able to collect evidence from the crime scene and ask questions pertaining to the crime scene.
Investigative Skills	The students' investigation skills do not show synthesis of how the evidence connected to the crime.	The students investigated the crime but were unable to fully synthesize how the suspect was guilty.	The student was able to investigate the crime with their team members and were able to synthesize the information found.
Presentation	The student did not present or the presentation was not completed.	The student presented their findings but did not explain how the evidence was linked to the suspect.	The student presented their findings from the crime scene and fully explained how the evidence was linked to the suspect.

Student Collaboration Survey (Each team member will do the survey on their team)

	Inadequate- 1 Points	Developing- 2 Point	Satisfactory- 3 Points
Focus on Task	Rarely focuses on the task and what needs to be done. Lets others do the work.	Focuses on the task and what needs to be done most of the time. Other members sometimes need to remind this person to keep on task.	Consistently stay focused on the task and what needs to be done. Other group members can count on this person.
Working with Others	Rarely listens to, shares with, or supports the efforts of others. Often is not a good team player.	Usually listens to, shares with, and supports the efforts of others. Tries to not cause trouble within the group.	Listens to, shares with, and supports the efforts of others. Tries to keep people working well together.
Creative Problem-Solving	Does not try to solve problems or help others solve problems. Lets others do the work	Refines solutions suggested by others.	Actively looks for and suggests solutions to problems.
Contribution	Rarely provides useful ideas when participating in the group. May not participate.	Sometimes provides useful ideas when participating in the group. A good group member who does what is required.	Routinely provides useful ideas when participating in a group. A strong group member who works hard.

Papers for students to collect notes at the crime scene independently:

Then students will be split into groups of 3-4 students and within their group they will look at the crime scene. For the first 5 minutes, students will observe the crime scene and write down notes about what they see. During this time students will not talk to one another and will not touch anything at the crime scene. After the 5 minutes is up students will go back to their seats and discuss with their group about what they noticed at the crime scene.

(Facet: Perspective--Students will have to look at the crime scene with critical eyes to see the scene through their eyes and the murders.)

Students will be given the following paper in order to take notes while “in the field”:

Descriptive Notes	Reflective Notes
Tips: Focus your attention Start with wide angle; Look at the big picture, then zoom in for details Be detailed Describe precisely what you observe Withhold inferences and judgements	Tips: Be Subjective Emphasize hunches and impressions Includes unanswered questions Correct mistakes and misunderstandings for other field notes Include insights and speculations Make predictions

Students will be given the following paper in order to take notes on the evidence they find:

Item	Description	Significance

TASK FOR STUDENTS

Last night Durham County Police officers were called to the scene of a crime when a home was broken into and the resident of the house was murdered. By the time the police arrived the perpetrator had fled the scene. The back door to the house had a window in it, which was broken. The police believe this is where the burglar entered the house. The victim was found in his bedroom with a deep wound in his chest. There was no murder weapon found at the scene. After talking with neighbors, family, and friends the police were able to narrow the potential suspects down to 4. They want the murder solved quickly, which is why the Durham Chief of Police has called your team of scientists to do the job.

The chief of police wants you to investigate the crime scene with your most capable forensic scientists and investigators. The team has been asked to collect and examine evidence from the crime scene. The Chief of police has informed your team that you are able to interview the suspects and eyewitnesses to ask them any questions that may help you to solve the case quickly.

After you have solved the crime, you will present the case to the Chief of Police and other fellow investigators. You will need to present evidence from the crime scene, information you gained from the suspects, and explain how that information will get a guilty verdict in front of a judge. This is a very important case and the Chief of Police is counting on your team of investigators in order to solve the murder.

****The police report is attached for your team to go over information that has already been collected by the police officers.****

POLICE REPORT

The Victim

Name: Levi Gregg

Estimated Time of Death: between the hours of 6-9 pm on September 23rd

Place of Death: 1234 Hudson Ave Durham , NC

Levi Gregg was a loving husband and was married to Simone for 8 years. He was working as a CEO of Ping insurance until his untimely death. Levi worked long hours, but enjoyed his job. When he wasn't working he was seen spending time with his wife. He was found at 9:30 PM by the police officers on the night of September 23rd and an anonymous person called 911 to report the crime.

Suspects & Eye Witnesses

The Wife, 32

Name: Simone Gregg

Hair Color: brown

Height: 5'7

Simone Gregg has been married to Levi Gregg for 8 years. They met in college and were married after they graduated college. Simone says that they had their ups and downs, but were happy together. However, we know from another source that the couple is in marriage counseling. Simone explained that Levi worked a lot and that he had been having trouble at work recently with his boss. She said that the business was failing and that Charlie wanted to sell the business, but Levi wouldn't allow it. On the night in question Simone was at her friend Kima's house. Simone says she was there until 11 PM and never left Kima's house.

The Neighbor, 67

Name: Walter Bunk

Hair Color: Black

Height: 6'

Walter Bunk has lived in his current house of 1234 Hudson Ave for over 15 years and said that the Gregg's have lived in their current house for the past 4 years. Mr. Bunk claims that the couple always appeared friendly, however on many occasions he did hear yelling and arguing coming from the house. On the night in question, Mr. Bunk said that he was home all night with his wife and at around 7 PM he heard yelling coming from the house, but figured it was the couple having an argument again. However, he said he did see a figure running down the street after the yelling stopped.

The Friend, 36

Name: Kima George

Hair Color: Blonde

Height: 5'11

Kima George has been friends with Simone since highschool and friends with Levi since college. Kima has explained that once Simone and Levi started dating, they were inseparable. Kima said that Simone and Levi have the perfect life on the outside, but that they have their share of issues. Currently money had been tight for the couple, because Levi would keep spending it on anything that he wanted to get. Kima explains that they have been doing alot better since they have been going to marriage counseling and started addressing the money issues. On the night in question, Kima said that Simone was at her house and only left once for about 40 minutes to go get food, which she thinks was around 7 PM.

The Colleague, 43**Name:** Charlie King**Hair Color:** Black**Height:** 5'9

Charlie King had been in business with Levi Gregg for the past 4 years, since the couple had moved to the town. Mr. Gregg was transferred from another office of Ping Insurance and took over the CEO position. Mr. King said that he and Levi got along well up until recently. The insurance company was losing business rapidly and Mr. King wanted to sell the business, however Levi did not. They were at odds during work and always ended up arguing about what they should do with the company. On the night in question Mr. King was eating at a restaurant with his girlfriend, however we have not been able to reach the girlfriend to corroborate his story.

Questions During the Investigation

Crime Scene Investigation:

1. What important information have you been able to find during the investigation? List as many ideas as you can.
2. What questions do you have about the crime scene, the suspects, or the victim? Write down as many questions as you can.
3. At this point in your investigation, who do you think committed the murder? Why? What evidence supports your theory?
4. After reevaluating your evidence, has your theory changed at all? Has the suspect? Why or why not?
5. You will need to generate questions in a matrix about their investigation that can be answered with yes or no questions.
6. After you have solved your case, you will need to think about how you want to present your findings to your classmates and chief of police. In your report make sure to include the following:
 - Evidence from the crime scene that supports your theory
 - Information gained from suspects
 - Who committed the crime and howYou may present the information however your group decides.
7. Explain in your own words "How does investigation encourage collaboration"?