**Topic:** Crime Lab Chemistry—Are You an ACE Detective?

**Suggested Grade Level:** 3rd-5th, but can easily be adapted for any grade level

**Conceptual Lens:** Interactions

**Supporting Concepts:** Change, Perspective, Time, Patterns, Identification, Justice, Choice, Consequences, Freedom

**Careers:** forensic scientist, defense attorney, prosecuting attorney, judge, handwriting analyst, fingerprint analyst, police officer, bailiff, court reporter, psychologist, CSI investigator, and many others related to CSI

**Process Skills:** Organizing, Classifying, Critical and creative thinking, Listening and responding to others, Planning, Observing, Evaluating, Synthesizing ideas, Comparing and contrasting, Interpreting data, Presenting data, Differentiating between fact and opinion, Differentiating between evidence and inference

**Vocabulary:** chromatography, forensic science, analysis, hard evidence, shaky evidence, unimportant evidence, incriminate, judicial system, defendant, defense attorney, prosecution attorney, witness, bailiff, judge, jury, reasonable doubt, innocent, guilty, expert witness, character witness, fingerprinting, evidence, inference, fact, opinion, “shadow of a doubt”

**Overview:** This unit is designed to broaden students’ thinking and to provide them with several interesting chemistry-related activities and challenges. Students begin to think about the structure of matter and how this structure can lead to a better understanding of interesting phenomena in nature and science. This unit sets the stage for future scientific investigations. It also teaches students to consider values and character both in their own lives and in the lives of others while using the judicial process. The trial uses a creative and challenging process that requires teamwork.

**Preassessment:** Students will use Productive Thinking to list many, varied, and unusual types of interactions. How do you interact with others? What happens during interactions? To what do interactions often lead? [A change or a change in perspective] Discuss this last question with your group. What are you doing as you discuss this question? [Interacting]

**Culminating Performance Task:**

Investigate a crime scene and solve a possible murder case in order to understand how time, patterns, and interactions lead to identification.

- You are a crime scene investigator attempting to solve a possible murder case. It is your job to use the evidence found at the crime scene to determine which suspect is the likely perpetrator. You will conduct several experiments on the evidence uncovered that will eliminate all suspects but one.

Analyze the evidence to determine if enough evidence was uncovered to convict the defendant of the crime in order to understand how justice is served when choices lead to consequences that affect freedom.

- You are part of either a defense or prosecuting team that will prepare for a trial. If you are part of the defense team, it is your job to use the evidence uncovered at the crime scene to maintain the defendant’s innocence. You will use the evidence to cast doubt that your defendant is guilty. If you are part of the prosecuting team, you will use the evidence uncovered at the crime scene to attempt to prove beyond a shadow of a doubt that the defendant is guilty.
- After preparing your case, the defendant will go before a grand jury to determine if enough evidence was uncovered to take him or her to trial. If not, the defendant will be set free. If enough evidence was uncovered, the defendant will be prosecuted in a courtroom. You will be a defense attorney, a prosecuting attorney, the bailiff, a witness, or the defendant. The teacher will be the judge, and the general education students from your homeroom will act as the jury. If the defendant is found not guilty, then he or she will retain freedom. If the defendant is found guilty, then he or she will lose freedom.
TOPIC:
Crime Lab Chemistry—Are You an ACE Detective?

CONCEPTUAL LENS:
Interactions

Critical Content

FACTS
1. Forensic science is the use of sciences to attempt to answer questions concerning the legal system. These questions can be regarding a civil or criminal investigation.
2. The judicial system is the system of courts that interprets and applies the law of the land. It does not make or enforce the law.

SKILLS
1. Organizing
2. Classifying
3. Critical and creative thinking
4. Listening and responding to others
5. Planning
6. Observing
7. Evaluating
8. Synthesis of ideas
9. Compare and contrast
10. Interpreting data
11. Presenting data
12. Differentiate between fact and opinion
13. Differentiate between evidence and inference
14. Research

CONCEPTS
1. Investigations
2. Evidence
3. Interdependence
4. Change
5. Choice
6. Consequences
7. Systems
8. Justice
9. Perspective
10. Freedom
11. Equality
12. Patterns
13. Time
**Essential Understandings**
1. Interactions can lead to a change in perspective.
2. Time, patterns, and interactions can lead to identification.
3. Justice may be served when choices lead to consequences that affect freedom.

**Essential Questions**
1. How can interactions lead to a change in perspective?
2. How can time, patterns, and interactions lead to identification?
3. How and why may justice be served when choices lead to consequences that affect freedom?

**Culminating Performance Task**
Investigate a crime scene and solve a possible murder case in order to understand how time, patterns, and interactions lead to identification.

- You are a crime scene investigator attempting to solve a possible murder case. It is your job to use the evidence found at the crime scene to determine which suspect is the likely perpetrator. You will conduct several experiments on the evidence uncovered that will eliminate all suspects but one.

Analyze the evidence to determine if enough evidence was uncovered to convict the defendant of the crime in order to understand how justice is served when choices lead to consequences that affect freedom.

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Technology (2008)
3rd-5th: 1. Use input and output devices of technology systems
   5. Practice safe use of technology systems and applications.
   6. Describe social and ethical behaviors related to technology use.
   8. Collect information from a variety of digital sources.
   11. Use digital tools to analyze authentic problems.

Social Studies (2004)
6.9: Identify changes in the American home front during World War II.
6.10: Identify major social and cultural changes in the United States from 1945 to 1960.
6.14: Identify cultural and economic changes throughout the United States from 1960 to the present.
7.4: Compare duties and functions of members of legislative, executive, and judicial branches of local, state, and national governments.
7.5: Explain the importance of juvenile, adult, civil, and criminal laws within the judicial system of the United States.
7.9: Identify individual and civic responsibilities of citizens of the United States.
7.10: Describe changes in social and economic conditions in the United States during the twentieth and twenty-first centuries.
7.12: Explain how the United States can be improved by individual and collective participation and by public service.
12.12: Contrast rights and responsibilities of citizens in a representative democracy.

English Language Arts (2007)
4.3: Use a wide range of strategies, including distinguishing fiction from nonfiction and making inferences, to comprehend fourth-grade recreational reading materials in a variety of genres.
4.12: Organize information on a specific topic obtained from grade-appropriate reference materials.
5.1: Demonstrate reading vocabulary knowledge, including recognition of multiple-meaning words.
5.8: Express meaning through writing varied sentence structure, detailed paragraphs, and multi-paragraph compositions in an organized manner.
5.9: Apply mechanics in writing, including capitalization of first word in a direct quotation and use of punctuation, including quotation marks and comma with direct quotations, colon to introduce a list, and commas after introductory words, with a noun of direct address, and in a compound sentence.
5.10: Demonstrate knowledge of grammar and usage concepts, including subject-verb agreement with a compound subject; present, past, and future verb tenses; forms of adjectives; forms of nouns; and subject, object, and possessive pronouns.
5.11: Use search strategies in the research process to identify reliable current resources and computer technology to locate information.
5.12: Demonstrate eye contact, articulation, and appropriate voice intonation with expository presentations.
5.13: Apply strategies of a skillful listener, including maintaining eye contact, attending to the listening task, and assigning meaning to the message.
6.14: Use organizing and paraphrasing in the research process.
7.12: Cite sources used in the research process.
7.13: Apply steps in the research process to identify a problem or issue, locate resources and information, and present findings.

Mathematics (2010)
6.29: Summarize numerical data sets in relation to their context.
Forensic Science (2006—9th-12th)
1. Describe responsibilities of various personnel involved in crime scene investigations.
   Examples: police, detectives, laboratory specialists, medical examiners
   • Explaining how to search, sketch, and record data from a crime scene
2. Explain ways to collect and preserve evidence from a crime scene.
   • Distinguishing between physical evidence and witness evidence
   • Comparing the three main pattern types that combine to form an individual’s unique fingerprint
   • Explaining different methods of latent fingerprint development
   • Identifying origins of impressions, including footwear and tire treads
   • Describing ways to identify hair, fiber, and blood evidence
10. Describe techniques used to determine the validity of documents.
    Examples: fiber and handwriting analyses, ink chromatography

Career/Technical Education (2008)
Career Cluster Explorations (7th)
3. Demonstrate oral presentation skills that sustain listener attention and interest, including eye contact, clear enunciation, and use of visual aids.
4. Apply active listening skills to obtain and clarify information
6. Create a personal plan of study to meet career goals and objectives.
7. Demonstrate positive work behaviors and personal qualities, including displaying a willingness to acquire new knowledge and skills, demonstrating integrity in a work situation, and indicating a willingness to follow rules and procedures.
8. Describe employment skills needed for obtaining and maintaining a job.
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10. Demonstrate leadership skills for creating an environment that fosters mutual trust and confidence.
12. Identify employment opportunities to match personal interests and aptitudes.

Forensic and Criminal Investigations
1. Explain career opportunities in forensic and criminal investigations.
4. Explain criminal investigation procedures, including purpose and types.
5. Describe responsibilities of various personnel involved in crime scene investigations.
6. Explain ways to collect and preserve evidence from a crime scene.
12. Explain fingerprinting methods and identification techniques.
15. Describe techniques used to determine the validity of forensic documents.
   Examples: fiber and handwriting analyses, ink chromatography

Introduction to Criminal Justice
1. Describe career opportunities in the criminal justice system.
5. Describe the role of individuals involved in the trial process.

Introduction to Law and the American Legal System
1. Explain career opportunities within the American legal system.
12. Explain basic rules of evidence in the justice system.

Law and Society
1. Interpret components and categories of state and federal criminal law.
3. Critique influences, sources, and structure of the law and court systems.
5. Determine career and entrepreneurial opportunities, responsibilities, and educational and credentialing requirements related to the legal profession.

Police Patrol
1. Explain career opportunities in law enforcement
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<th>Content Knowledge/Standards</th>
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<th>Interactions</th>
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<td>Concepts:</td>
<td>Change, Perspective</td>
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<tr>
<td>Lesson 1</td>
<td>EU:</td>
<td>Interactions can lead to a change in perspective.</td>
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<td></td>
<td>EQ:</td>
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<td>SQs:</td>
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<td>SQs:</td>
<td>What is change? How have you changed since last year? How has your family changed? How has school changed? How has our nation changed? What is about to happen that could potentially cause a lot of change in our nation? Is change always good? Why or why not?</td>
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Assessment
Pre: Students will use Productive Thinking to list many, varied, and unusual types of interactions. How do you interact with others? What happens during interactions? To what do interactions often lead? [a change or a change in perspective] Discuss this last question with your group. What are you doing as you discuss this question? [interacting]

Post: Students will create and perform a skit about how interactions resulted in a recent change in perspective.

Teacher-created rubric following day of performance

Introduction
Overview of the Unit: This unit is designed to broaden students’ thinking and to provide them with several interesting chemistry-related activities and challenges. Students begin to think about the structure of matter and how this structure can lead to a better understanding of interesting phenomena in nature and science. This unit sets the stage for future scientific investigations. It also teaches students to consider values and character both in their own lives and in the lives of others while using the judicial process. The trial uses a creative and challenging process that requires teamwork.

This unit includes: Organizing, Classifying, Critical and creative thinking, Listening and responding to others, Planning, Observing, Evaluating, Synthesis of ideas, Compare and contrast, Interpreting data, Presenting data, Differentiate between fact and opinion, Differentiate between evidence and inference, Research

Unit Pacing: Nine to twelve weeks, depending on the needs of the students

Background Information for the teacher: Forensic science, judicial system

Definitions: Forensic science is the use of sciences to attempt to answer questions concerning the legal system. These questions can be regarding a civil or criminal investigation.
The judicial system is the system of courts that interprets and applies the law of the land. It does not make or enforce the law.

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<td><em>Students will choose between activities 1 and 2. The entire class will do activity 3 and discuss the questions in class.</em></td>
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<td><strong>ACTIVITY 1:</strong></td>
<td>Students will bring pictures of themselves since their birth until the present. After arranging the pictures chronologically, they will write about the physical changes they see in themselves. Then students will imagine what they will look like in ten years and will draw a futuristic self-portrait.</td>
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<td><strong>ACTIVITY 2:</strong></td>
<td>Students will bring pictures of their families from as many years as possible before they were born until the present. They will also interview and record (possibly videotape) older relatives, such as grandparents, to discuss how their families have changed. They might ask questions such as, “How has fashion changed? Is education valued more now than when you were young? What type of entertainment did you have? How has the government changed?” They will write about how their families have changed through the years and present the interview to the class. If possible, they will bring their grandparents to class to answer questions.</td>
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<td><strong>ACTIVITY 3 (Ongoing):</strong></td>
<td>Students will monitor the news concerning the Presidential election and inauguration. The class will discuss how the outcome of the election can change our nation. Is change always good? Why or why not?</td>
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<td><strong>SQs:</strong></td>
<td>What is perspective? Do you have different perspectives in different situations?</td>
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<td><strong>ACTIVITY:</strong></td>
<td>Combine with the activity for the next SQ.</td>
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<tr>
<td><strong>SQ:</strong></td>
<td>What can cause your perspectives to change?</td>
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| **ACTIVITY:** | Use an optical illusion to demonstrate how easy it is for two people to have a completely different perspective. Allow ½ of the class to observe a picture of an old lady. After they look at it for about 30 seconds, ask them to put their heads down while the other ½ observes a picture of a young woman. Again, allow them to observe it for 30 seconds. Ask them to close their eyes. Ask the entire class to open their eyes while you show a picture of the old lady and the young woman combined. Ask the class what
they see. Most that saw the old lady before will still see an old lady. Conversely, most that saw the young woman the first time will see a young woman again. Place them into groups of four—two that saw the old lady and two that saw the young woman. Ask students to explain why they saw what they saw. They should compare and contrast their responses. Once they have had ample opportunity for discussion, show them the individual pictures. Again, ask them to discuss what they saw. See if they can come to the conclusion of how easy it is to influence our perspectives. Once they have this realization, they should be able to see how easily something can cause them to change their perspectives.

**Service Learning:** Students will bring unwrapped gifts for senior citizens to school. These gifts can be anything from chapstick to facial tissue to blankets. Students will wrap the gifts at school, later deliver them to a retirement home, and put them under the tree. Students' perspectives of senior citizens will change from this experience because they will see that they have needs just like they do. They will see them as people and not just as "old" people.

**Whole Group Discussion:** After the activities and the service learning project, TTW ask "How have our interactions with each other and with the senior citizens caused us to realize that those interactions can lead to a change in perspective?"

**Suggested Procedure following the activities with the SQs:**

**Day 2:** As the students enter the classroom, they will sign a crime scene log to establish proof that they were the CSI Investigators at the crime scene.

**Whole Group: Introducing the Challenge**
- TTW gather the class away from the crime scene. Say that today they will observe the scene of a "made-up" crime, and that in the next few weeks they will be forensic scientists, working to solve the mystery of "who done it."
- TTW remind the students to keep an open mind.

**Individually: A First Look at the Scene of the Crime**
- TTW tell the students to spend five minutes carefully observing the scene, staying behind the barrier.
- After five minutes, TTW gather the class away from the scene and ask for observations. TTW list them on the flipchart and discuss.

**Direct Instruction: Examining the Crime Scene (from Mystery Festival)**
- TTW hold up one object from the crime scene and ask for descriptions. Help students understand the difference between evidence and inference. They should record only what they observe directly (evidence)
- TTW explain that each team will examine one of the four sections. Explain the procedure for drawing and recording the evidence.
- TTW introduce the Suspect Footprints sheet, and ask students to use them to identify footprints they find on the scene.
- TTW pour cola out of the cups on the scene into the extra cups labeled, “Felix’s Cola” and
“Alfredo’s Cola.” Set aside. Put the empty cups with fingerprints into zip lock bags and return them to the scene.

- TTW show students how to label their index cards, and how to place them on the Crime Scene Map.
- TTW assign each team to a section of the crime scene. Distribute drawing paper, pencils, index cards, and Suspect Footprint sheets and have them begin.

**Day 3: Small Groups**—TTW introduce the session by giving post-it notes to each of the groups. TSW write each piece of evidence on a separate post-it.

**Whole Group:** TTW present the scenario (*Mystery Festival*, pp. 135-136).

**Small Group: Presenting the Suspects and their Statements**
- TTW give shredded pictures of the suspects and ask students to put pictures back together.
- TSW act as detectives as they read the suspects’ statements. TTW ask students to summarize statements.
- TTW point out that they will need to decide which evidence is important, and that there is no “right answer.”

**Small Groups: Discussing and Classifying the Clues**
- TTW have each group of forensic scientists to report their findings from the previous sessions and allow the class to discuss.
- TSW act as detectives as they put each clue into the column where the majority thinks it should go. If unsure about a clue, put it in the “Can’t Decide” column.
- As students classify each clue, TTW ask them if it is
  - **Hard evidence**—looks very incriminating to a particular suspect or is very directly connected to the crime
  - **Shaky evidence**—not very informative or reliable, or possibly even planted to frame someone
  - **Unimportant**—probably has nothing to do with the crime or suspects
- TTW place a mark next to all the clues the class thinks are “hard evidence.”

**Whole Group: Develop the Fingerprints**
- TTW hold up each of the two zip lock bags with the empty cups with fingerprints. Add 3-4 drops of Crazy Glue to each. Seal the bag.
- TTW explain that the Crazy Glue gas will adhere to the oils on the fingerprints and make them appear white, and easier to see.
- TTW say that they will get to examine the fingerprints and do crime lab tests on other evidence in the next two class sessions.

**Whole Group Discussion:** TTW ask, “Now that you have come this far in our investigation, do you see how interactions can lead to a change in perspective? Explain.”
| Learning Activities | **Analytical Thinking Skills:** Evaluating, Synthesis of ideas, Compare and contrast, Interpreting data, Differentiate between fact and opinion  
**Skills:** Listening and responding to others, Differentiate between evidence and inference  
**Creativity Skills:** Critical and creative thinking, Flexibility  
**Processes:** Organizing, Classifying, Planning, Observing |
|---------------------|------------------------------------------------------------------------------------------------|
| Resources | **Print:** Productive Thinking activity, students’ pictures and family pictures  
**Non-Print:** Television news broadcasts, optical illusions, supplies for creating self-portraits (colored pencils, markers, paper, etc.), wrapping paper, gifts for the elderly, materials necessary for creating a mock crime scene, paper for note-taking, pencils, note cards, post-it notes  
| Products | Futuristic self-portrait, wrapped gifts for elderly |
| Grouping | **Whole group:** Pre assessments; post discussions  
**Small group:** Students will examine evidence and make inferences from it; post assessment  
**Individual:** Futuristic self-portraits |
| Extensions | Students will monitor a current criminal case and note how people’s perspectives change after observing the results of interactions of the forensic scientists and criminal investigators. |
| Differentiation/Ascending Levels of Intellectual Demand | 1. Scaffolding as needed during discussions.  
2. Students will project the outcome of the current criminal case being monitored. |
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<td>Knowledge/Standards</td>
<td><strong>Concepts:</strong></td>
<td>Time, patterns</td>
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**Lesson 2**

**EU2:** Time, patterns, and interactions can lead to identification.

**EQ2:** How can time, patterns, and interactions lead to identification?

**SQs:** What is time? How do you spend your time?

**SQs:** What are patterns? Is there a pattern to your life? Do you use patterns at home? At school?

**SQs:** What are interactions? How can interacting with others be either positive or negative?

**ALCOSS:**

**English Language Arts (2007)**

4.3: Use a wide range of strategies, including distinguishing fiction from nonfiction and making inferences, to comprehend fourth-grade recreational reading materials in a variety of genres.

4.12: Organize information on a specific topic obtained from grade-appropriate reference materials.

5.1: Demonstrate reading vocabulary knowledge, including recognition of multiple-meaning words.

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6.29: Summarize numerical data sets in relation to their context.

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   Examples: police, detectives, laboratory specialists, medical examiners

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**Career/Technical Education (2008)**

**Career Cluster Explorations (7th)**

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1. Describe career opportunities in the criminal justice system.
5. Describe the role of individuals involved in the trial process.

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1. Interpret components and categories of state and federal criminal law.
3. Critique influences, sources, and structure of the law and court systems.
5. Determine career and entrepreneurial opportunities, responsibilities, and educational and credentialing requirements related to the legal profession.

**Police Patrol**

1. Explain career opportunities in law enforcement.
**Assessment**

**Pre:** Students will visit the website, [http://www.cyberbee.com/whodunnit/crime.html](http://www.cyberbee.com/whodunnit/crime.html), to solve mock Internet crime.

**Post:** Students will create and perform a skit that demonstrates how time, patterns, and interactions can lead to identification.

(After day 6) Teacher-created rubric:

<table>
<thead>
<tr>
<th>Task</th>
<th>Forensic Scientist</th>
<th>Exemplary</th>
</tr>
</thead>
<tbody>
<tr>
<td>Brown Stain Test Station (using chromatography)</td>
<td>Did not follow procedure</td>
<td>Followed procedure as written</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Not only followed procedure but also made inferences about data collected.</td>
</tr>
<tr>
<td>Cola Test Station (pH test)</td>
<td>Did not follow procedure</td>
<td>Followed procedure as written</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Not only followed procedure but also made inferences about data collected.</td>
</tr>
<tr>
<td>Fingerprint Station</td>
<td>Did not follow procedure</td>
<td>Followed procedure as written</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Not only followed procedure but also made inferences about data collected.</td>
</tr>
<tr>
<td>Smells Station</td>
<td>Did not follow procedure</td>
<td>Followed procedure as written</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Not only followed procedure but also made inferences about data collected.</td>
</tr>
<tr>
<td>Thread Test Station</td>
<td>Did not follow procedure</td>
<td>Followed procedure as written</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Not only followed procedure but also made inferences about data collected.</td>
</tr>
<tr>
<td>DNA Station</td>
<td>Did not follow procedure</td>
<td>Followed procedure as written</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Not only followed procedure but also made inferences about data collected.</td>
</tr>
<tr>
<td>Melted Ice Cube Test Station (pH test)</td>
<td>Did not follow procedure</td>
<td>Followed procedure as written</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Not only followed procedure but also made inferences about data collected.</td>
</tr>
<tr>
<td>Secret Note Station (handwriting analysis)</td>
<td>Did not follow procedure</td>
<td>Followed procedure as written</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Not only followed procedure but also made inferences about data collected.</td>
</tr>
<tr>
<td>Powders Station</td>
<td>Did not follow procedure</td>
<td>Followed procedure as written</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Not only followed procedure but also made inferences about data collected.</td>
</tr>
<tr>
<td>Tape Lift Station</td>
<td>Did not follow procedure</td>
<td>Followed procedure as written</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Not only followed procedure but also made inferences about data collected.</td>
</tr>
<tr>
<td>Determined most likely suspect</td>
<td>Could not decide</td>
<td>Decided, but only after listening to others' thoughts and generalizations</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Used evidence collected at the crime scene and the tests conducted on the evidence to critically determine the most probably suspect</td>
</tr>
</tbody>
</table>

(After day 9) Teacher-created rubrics for defense and prosecution teams:
<table>
<thead>
<tr>
<th>TRAIT</th>
<th>Unacceptable</th>
<th>Acceptable</th>
<th>Exemplary</th>
</tr>
</thead>
<tbody>
<tr>
<td>Commitment</td>
<td>Seems reluctant to engage fully in discussions and task assignments</td>
<td>Consistently demonstrates commitment to the team by being prepared for each class.</td>
<td>Follows up on ideas and suggestions from previous class and reports findings to the group</td>
</tr>
<tr>
<td>Balance between task and interpersonal relations</td>
<td>Focuses exclusively on task to be accomplished without regard to team members or focuses exclusively on interpersonal relations without regard to task</td>
<td>Balances the need for task accomplishment with the needs of individuals in the group</td>
<td>Volunteers to assist others and shares information openly.</td>
</tr>
<tr>
<td>Contributions</td>
<td>Does not offer ideas or suggestions that contribute to problem solving.</td>
<td>Frequently offers helpful ideas or suggestions</td>
<td>Listens actively and shows understanding by paraphrasing or by acknowledging and building on others’ ideas.</td>
</tr>
<tr>
<td>Stays on Track</td>
<td>Takes the group off track by initiating conversations or discussions unrelated to the task.</td>
<td>Introduces suggestions and ideas that are relevant to the task</td>
<td>Uses tact and diplomacy to alert group that focus has strayed from the task at hand</td>
</tr>
<tr>
<td>Used evidence to maintain defendant’s innocence</td>
<td>Did not use evidence to maintain defendant's innocence</td>
<td>Only used evidence uncovered at the crime scene to attempt to maintain defendant's innocence</td>
<td>Uncovered evidence not found at the crime scene to maintain defendant's innocence</td>
</tr>
<tr>
<td>TRAIT</td>
<td>Pre-trial</td>
<td>Acceptable</td>
<td>Exemplary</td>
</tr>
<tr>
<td>-----------------------------------</td>
<td>-----------</td>
<td>------------</td>
<td>-------------------------------------</td>
</tr>
<tr>
<td><strong>Commitment</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Unacceptable</td>
<td>Consistently demonstrates commitment to the team by being prepared for each class.</td>
<td>Follows up on ideas and suggestions from previous class and reports findings to the group</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Balance between task and interpersonal relations</strong></td>
<td></td>
<td></td>
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<td></td>
<td></td>
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<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Contributions</strong></td>
<td></td>
<td></td>
<td></td>
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<td></td>
<td></td>
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<tr>
<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td><strong>Stays on Track</strong></td>
<td></td>
<td></td>
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<td></td>
<td></td>
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<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Used evidence to prove defendant’s guilt</strong></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Introduction</strong></td>
<td>TTW write the word “patterns” on the board and discuss how it relates to CSI investigations.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>------------------</td>
<td>------------------------------------------------------------------------------------------</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
| **Teaching Methods** | **Day 4: Whole Group**  
**SQ:** What is time?  
**Guiding Questions:** How do you spend your time?  
**ACTIVITY:** Students will explore the very abstract concept of time by reading *How We Measure Time* and then using Socratic Circles. They will then produce a product to demonstrate their understanding of time. The product will be their choice. Examples include, but are not limited to, writing poetry, journaling, and creating a piece of artwork. They will need to include “A Day in the Life of [student’s name].”  
**SQs:** What are patterns? Is there a pattern to your life? Do you use patterns at home? At school?  
**ACTIVITY:** Using the product students created, “A Day in the Life of [student’s name],” students will discuss the patterns in their lives. What do they do each day when they get home? Does this happen regularly? In other words, is there a pattern to this? What about school? Does the time they spend at school revolve around a specific routine or pattern?  
**SQ:** What are interactions? (if needed)  
**ACTIVITY:** See first activity from lesson 1. |
| **Suggested Procedure:** | **Days 5 & 6:** Prior to class, TTW make necessary preparations (see *Mystery Festival*, p. 147-155)  
**Whole Group:** Revisit the Story—TTW retell the story and re-read suspects’ information  
**Direct Instruction:** Introducing the Stations  
- TTW explain that students will work in previously assigned groups and do tests on the evidence found at the scene of the crime.  
- TTW hold up a station sign and explain how TSW need to carefully read each sign before beginning station  
  - Brown Stain, Cola Test, Smells, Fingerprints (Fingerprint Analysts), Threads Test—**Day 5**  
    - TSW rotate between stations as they complete each.  
  - Melted Ice Cube, DNA, Secret Note (Handwriting Experts), Powders, Tape Lift—**Day 6**  
    - TSW rotate between stations as they complete each.  
- TTW briefly explain how to do each station by demonstrating as necessary.  
- TTW ask how students think each station test ties in with the mystery.  
- TSW examine crime scene map and clue board as necessary  
**Small Group:** Crime Lab Testing and Recording Results  
- TTW explain rules and procedures for participating in stations  
- TTW show how to record results on the data sheet. |
• TTW explain that after the first station, they can go to stations as directed.
• TTW say that if they have extra time, they may return to the Crime Scene Map and /Clue Board to review the evidence.
• TTW caution students not to jump to conclusions. Solving a mystery is like putting together a big puzzle—it’s challenging to see the whole picture if you only have one or two pieces.
• TTW hand out data sheets and pencils and assign teams to their first stations.
• TSW act as forensic scientists and conduct tests as needed
• TTW circulate to ensure students are following procedures
• As students complete stations, TTW remove stations from tables and place on counter.

**Whole Group: Pooling Class Data on the Crime Scene Map**
• TSW return with their groups to their original tables. Using the Crime Scene Map and their results, each group will take a few minutes to discuss their data.
• TSW present results from each station. TTW ask who agrees or disagrees. Find out the results of those who disagree.
• TTW ask why people may have come up with different results. Remind them that scientists often disagree, and decide how to record the class results on the 3x5 cards on the Crime Scene Map.

**Whole Group: Putting Test Results on the Clue Board**
• Which suspect does the evidence now **incriminate**?—Record with post-it notes on Clue Board
• Why is some of the evidence unimportant?
• Which pieces of evidence incriminate a suspect the most? Why?
• TTW explain how they may change their minds once again after conducting more tests in the next session.
• TSW place data sheets in notebooks and return to teacher

**Day 7: Whole Group: Solving the Mystery**
• TTW give each student a “Who done it?” sheet
• TTW give each group a list of misdemeanors and felonies and discuss
• TTW ask the class, “Do you think that a crime was committed? If so, what was the crime and by whom was it committed?”
• TCW act as a Grand Jury to determine if there is enough evidence against the accused to bring him/her to trial
• TTW explain the different roles the students will play in the criminal trial.
• TSW write a resume (a good paragraph or two) and apply for the jobs that they prefer.
• TTW hire the students based upon the resumes and the prior knowledge the teacher has of the students. TSW be a defense attorney, a prosecuting attorney, the bailiff, a witness, or the defendant. Students could also be a psychologist, police officer, or forensic scientist.
• TTW divide the class into two groups—a defense group and a prosecution group.
• TTW give each group a trial booklet to be kept in a folder. The booklet will contain
  o Criminal behavior chart
  o Character behavior chart
  o Students’ roles
  o The trial procedure
  o Opening statement form
  o Legal argument form
  o Closing statement form
**Glossary of legal terms**

- **Small Group**: TSW work cooperatively to decide how they will defend or prosecute the accused. (Also **Day 8** and **Day 9**)

**Whole Group Discussion**: TTW ask, “Now that you think you have solved the mystery, do you see how time, patterns, and interactions can lead to identification? Explain.”

### Learning Activities

**Analytical Thinking Skills**: Evaluating, Synthesis of ideas, Compare and contrast, Interpreting data, Differentiate between fact and opinion

**Skills**: Listening and responding to others, Differentiate between evidence and inference

**Creativity Skills**: Critical and creative thinking, Flexibility

**Processes**: Organizing, Classifying, Planning, Observing, Research

### Resources

**Print**:
- Student-made product “A Day in the Life of student’s name.”

**Non-Print**: Computer with Internet access.

**Products**
- A product of the students’ choice to demonstrate understanding of time
- A determination of the primary suspect

**Grouping**

- **Whole group**: Post-assessment and discussion
- **Small group**: Students will collaborate to attempt to determine who committed the crime.
- **Individual**: Pre-assessment

**Extensions**
- Students will continue to monitor the criminal case to conclusion.

**Differentiation/Ascending Levels of Intellectual Demand**

1. Scaffolding as needed during discussions.
2. Students will create a resume to apply for the job of prosecuting attorney, defense attorney, witnesses, defendant, and bailiff. Teacher will assign roles based upon the resumes and the prior knowledge the teacher has of the students.
<table>
<thead>
<tr>
<th>Content</th>
<th>Conceptual Lens: Interactions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lessons</td>
<td>Justice, choice, freedom</td>
</tr>
</tbody>
</table>

**Lesson 3**

**EU3:** Justice may be served when choices lead to consequences that affect freedom.

**EQ3:** How and why may justice be served when choices lead to consequences that affect freedom?

**SQs:** What is justice? What happens when someone receives justice? How do you feel if someone doesn't receive the justice you feel he or she deserves?

What is choice? Are you glad you have choices? What is the difference between a good and a bad choice?

What are consequences? How do you feel about consequences? Are consequences good? Or are they bad? Can they be both?

What is freedom? What freedoms do you have at home? At school? In this country? What happens when someone loses his or her freedom?

**ALCOSS:**

**Social Studies (2004)**
- 7.4: Compare duties and functions of members of legislative, executive, and judicial branches of local, state, and national governments.
- 7.5: Explain the importance of juvenile, adult, civil, and criminal laws within the judicial system of the United States.
- 7.9: Identify individual and civic responsibilities of citizens of the United States.
- 12.12: Contrast rights and responsibilities of citizens in a representative democracy.

**Career/Technical Education (2008)**

**Career Cluster Explorations (7th)**
- 3. Demonstrate oral presentation skills that sustain listener attention and interest, including eye contact, clear enunciation, and use of visual aids.
- 4. Apply active listening skills to obtain and clarify information.
- 6. Create a personal plan of study to meet career goals and objectives.
- 7. Demonstrate positive work behaviors and personal qualities, including displaying a willingness to acquire new knowledge and skills, demonstrating integrity in a work situation, and indicating a willingness to follow rules and procedures.
- 8. Describe employment skills needed for obtaining and maintaining a job.
- 9. Demonstrate interpersonal skills, including teamwork, conflict management, problem-solving, and networking.
- 10. Demonstrate leadership skills for creating an environment that fosters mutual trust and confidence.
- 12. Identify employment opportunities to match personal interests and aptitudes.

**Forensic and Criminal Investigations**
- 1. Explain career opportunities in forensic and criminal investigations.
- 4. Explain criminal investigation procedures, including purpose and types.
- 5. Describe responsibilities of various personnel involved in crime scene investigations.
| Assessment | Pre: Students will use Productive Thinking to list many, varied, and unusual (MVU) types of freedom. The list needs to include freedoms they have at home, at school, and in this country. After creating this list, the class will discuss the types of freedoms listed and how those freedoms can be revoked.

Post: Students will write a short essay of knowledge obtained in the unit. The essay will include the students’ thoughts on the outcome of the case.

Final teacher-created rubric after last day of unit: |
<table>
<thead>
<tr>
<th>TRAIT</th>
<th>Unacceptable</th>
<th>Acceptable</th>
<th>Exemplary</th>
<th>Does not apply</th>
<th>Score</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Organization</strong></td>
<td>No opening statement, or irrelevant statement. Loses focus more than twice.</td>
<td>Has opening statement relevant to topic, and gives outline of speech. Mostly organized, loses focus only once or twice.</td>
<td>Has a clear opening statement that catches audience’s interest. Stays focused throughout.</td>
<td>Not responsible for opening statement</td>
<td></td>
</tr>
<tr>
<td><strong>Content</strong></td>
<td>Does not meet assignment requirements</td>
<td>Fulfills assignment.</td>
<td>Is more thorough than &quot;average.&quot; Questions and/or answers go beyond minimum requirements.</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Quality of conclusion</strong></td>
<td>Poor quality. Not tied to evidence presented. Does not summarize points that brought the speaker to this conclusion.</td>
<td>Adequate. Summarizes main evidence presented and draws conclusions based upon the evidence.</td>
<td>Goes beyond &quot;average&quot; in delivering a conclusion that is very persuasive.</td>
<td>Not responsible for closing statement</td>
<td></td>
</tr>
<tr>
<td><strong>Voice quality and pace</strong></td>
<td>Demonstrates one or more of the following: mumbling, hard to understand English, too soft, too loud, too fast, too slow.</td>
<td>Can easily understand - appropriate pace and volume.</td>
<td>Excellent delivery. Modulates voice, projects enthusiasm, interest, confidence.</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Mannerisms</strong></td>
<td>Demonstrates one or more distracting mannerisms, which may include bad posture.</td>
<td>No distracting mannerisms. Decent posture.</td>
<td>Uses body language effectively to maintain audience’s interest.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Team Member: __________________________

Cindy Thompson
<table>
<thead>
<tr>
<th>Introduction</th>
<th>TCW take a field trip to the local courthouse to visit a courtroom, a jail, and to possibly interview an attorney and judge.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Teaching Methods</td>
<td><strong>Day 10: Whole Group</strong></td>
</tr>
<tr>
<td><strong>SQ:</strong> What is justice? What happens when someone receives justice? How do you feel if someone doesn’t receive the justice you feel he or she deserves?</td>
<td><strong>ACTIVITY:</strong> The teacher will read <em>The Butterfly</em> by Patricia Palacco and use Bibliotherapy to guide the class to understand the importance of justice. How do you feel if someone doesn’t receive the justice you feel he or she deserves? How do you feel if someone hurts you and doesn’t get punished? How do you feel if you hurt someone and do not receive justice?</td>
</tr>
<tr>
<td><strong>SQs:</strong> What are choices? Are you glad you have choices? What is the difference between a good and a bad choice?</td>
<td><strong>ACTIVITY:</strong> The teacher will present a list of several different career paths. Students will be allowed to choose from this list or will make a different choice altogether. Based upon this career path, the students will use the Internet to determine how they will need to prepare for this career path. What do they need to do now in preparation for this career? What do they need to do in high school? What college will they need to attend? What will happen if they don’t adequately prepare for this career?</td>
</tr>
<tr>
<td><strong>SQs:</strong> What are consequences? How do you feel about consequences? Are consequences good? Or are they bad? Can they be both?</td>
<td><strong>ACTIVITY:</strong> Using the activity above, students will discover the consequences of not adequately preparing for their chosen career paths. What types of goals should be set now so that you can adequately prepare for your chosen career path?</td>
</tr>
<tr>
<td><strong>SQ:</strong> What is freedom? What freedoms do you have at home? At school? In this country? What happens when someone loses his or her freedom?</td>
<td><strong>ACTIVITY:</strong> Using Productive Thinking, students will list MVU types of freedom. The list needs to include freedoms they have at home, at school, and in this country. After creating this list, the class will discuss the types of freedoms listed and how those freedoms can be revoked.</td>
</tr>
</tbody>
</table>

**Suggested Procedure:**

**Day 11 Whole Group: Solving the Mystery**
- TTW give each group their trial booklet and folder
- TTW review the trial procedure with students
- TCW act as a defense attorney, a prosecuting attorney, the bailiff, a witness, or the defendant and present the trial according to the pre-determined schedule. TTW be the judge.
- The jury will find the defendant guilty or not guilty (or will have a **hung jury**). The jury will be students from the general ed classroom. Prior to the trial, the classroom teacher will instruct the jury as to the responsibilities of a jury. The classroom teacher will choose a jury foreman.

**Day 12: Whole Group Discussion:** TTW ask, “How and why is justice served when choices lead to consequences that affect freedom?”
- TSW write a short essay of knowledge obtained in the unit. The essay will include the students’ thoughts on the outcome of the case.
- TSW complete a self-evaluation from a rubric that they previously made.

**Learning Activities**

**Analytical Thinking Skills:** Evaluating, Synthesis of ideas, Compare and contrast, Interpreting data, Differentiate between fact and opinion

**Skills:** Listening and responding to others, Differentiate between evidence and inference

**Creativity Skills:** Critical and creative thinking, Flexibility

**Processes:** Organizing, Classifying, Planning, Observing

**Resources**

**Print:**
- Productive Thinking activity

**Non-Print:** Paper for note-taking, pencils

**Products**

- A guilty or not guilty verdict for the defendant
- A student created essay containing a synopsis of the unit

**Grouping**

**Whole group:** The trial

**Small group:** Defense and prosecution team

**Individual:** Individual role in the trial

**Extensions**

The class will monitor a current court case. Using the information known about the case, TCW determine if there is enough evidence to convict the defendant or if innocence should be maintained.

**Differentiation/Ascending Levels of Intellectual Demand**

Each student will play a part of a particular role within a courtroom. These roles will be based upon their interests, leaning styles, and prior knowledge the teacher has of the students.
Socratic Circle Guidelines:

1. Refer to the text when needed during the discussion. A circle is not a test of memory. You are not "learning a subject"; your goal is to understand the ideas, issues, and values reflected in the text.
2. It's OK to "pass" when asked to contribute, but you are expected to contribute at some point during the discussion.
3. Do not participate if you are not prepared. A circle should not be a bull session.
4. Do not stay confused; ask for clarification.
5. Stick to the point currently under discussion; make notes about ideas you want to come back to.
6. Don't raise hands; take turns speaking.
7. Listen carefully.
8. Speak up so that all can hear you.
9. Talk to each other, not just to the leader or teacher.
10. Discuss ideas rather than each other's opinions.
11. You are responsible for the circle's success, even if you don't know it or admit it.

These are the steps we will follow:

Step 1
You will have 10 minutes to read the text. While you are reading you should write questions you have on the page’s margin. You can circle words you don’t know, and underline key phrases. Keep track of the story or idea as it unfolds and also note word patterns and repetitions. Think about what the author is saying, meaning, and if it’s true. You will have 10 minutes to annotate the text.

Step 2
I will divide the group into two parts. The inner circle sits on the floor or in chairs, facing each other. The outer circle sits in chairs behind the inner circle quietly observing. I’ll state an opening question for the discussion. The question will reflect a genuine curiosity on my part, and it will lead you back to the text to speculate, evaluate, define, and clarify the issues involved. Responses to the opening question generate new questions from you and me, leading to new responses.

The initiating question is: “How do we measure time?”
General question: “Why do you think being measuring time is important?”

Step 3
The outer circle observes, listens, and writes a critique of the inner circle’s dialogue. You should focus on how the ideas are presented rather than what is being said. Make notes about these specifics: who asks the best questions; who speaks most and least; who leads the group; who distracts the group. You will complete Socratic Circle Feedback Form (attached).
Step 4
The assessment for this activity will be a self-assessment of your reflective journal entry for everyone and the feedback form completed by the outer circle. Also, I’ll be making notes on the circles to help me assess your performance.

Step 5
The follow-up to the circle will be a thesis statement. It is a concise statement for an imaginary literary essay and will be used in your chosen product.

In *How We Measure Time*, we learn that we denote the passage of time by counting (days/weeks/months/years)? The passage of time can also be denoted by (seconds/minutes/hours). It is important to plan for the passage of futuristic time because ______________.

Annotating the Text
• Circle any vocabulary words you are unfamiliar with or would have difficulty explaining to others.
• Underline key phrases.
• Keep track of the text/poem idea as it may unfold.
• Note word patterns and repetitions or anything that strikes you as confusing or important.
• Write down any questions and/or answers in the margins.

Keys to a Successful Socratic Seminar
1. Be prepared. Read the assigned text carefully, probably more than once. Try your best to fully understand it.
2. Write thought-provoking questions. Remember to write both questions and answers. Your questions and answers will be checked before the beginning of the seminar.
3. Keep an open mind during the discussion. Look for the strengths in other people’s ideas. Be prepared to change your point-of-view based on what you have learned.
4. If several people wish to talk, raise your hand and wait quietly to be called upon. Do not raise your hand while another student is speaking.
5. Speak loudly enough for everyone in the room to hear you. Look at other students when talking. Bring the assigned reading to the discussion; you may wish to refer to it.
6. If you don’t understand something, ask clarifying questions.
7. If you don’t have something to say, it is OK to “pass” when asked to contribute.
8. When in the outer circle, pay close attention to the discussion, and take notes.
Socratic Circle Questions:

Questions of Clarification:
1. What do you mean by_____?
2. What is your main point?
3. How does _____ relate to ______?
4. Could you restate that, please?
5. What do you think is the main issue?
6. Could you give me an example?
7. How would this be an example of______?
8. What is the opposite side of that argument?
9. Does that make sense in all cases? Explain.
10. Could you explain more about this?
11. How does this relate to what we’ve been talking about?

Questions that Probe Reasons, Evidence and Causes:
1. Could you explain your reasons?
2. How do you know that?
3. What evidence is there for believing that?
4. How strong is that argument? Explain.
5. Is there reason to doubt the evidence?
6. What other information do we need?
7. What would you say to someone who said ___?
8. How could we go about finding out if that was true?
9. What would change your mind?
10. Might that be true or must that be true? Explain.
11. Why is that happening?
12. On what authority are you basing your information/discussion/argument?

Questions that Probe Assumptions:
1. What assumptions are you making?
2. What is ____assuming?
3. Do you agree or disagree with…?
4. What else could we assume?
5. How did you choose those assumptions?
6. How can you verify or disprove that assumption?
7. Why would someone make that assumption?
Questions about Viewpoints:
1. You seem to be approaching this from the _____ perspective. Why?
2. Why have you chosen that perspective?
3. How would other groups respond? Why?
4. Is there another way to view this?
5. What would someone who disagrees say?
7. Is that stated with emotional feeling or logical ideas? Explain.
8. Is someone said _______. How would you respond?
9. Why is _______ necessary?
10. Who benefits from this?

Questions that Probe Implications and Consequences:
1. What are you implying?
2. How can we find out?
3. What does this question assume?
4. If that happened, what else would happen?
5. Would that necessarily happen or probably happen?
6. If ___ and ___ are the case, then what else must be true?
7. What would be the consequences?
8. How does ___ fit with what we’ve learned before?
9. Why is ___ important?
10. Would ___ ask this question differently?
11. Is this question easy or hard to answer? Why?
12. Is this the most important question or is there an underlying question that is really the issue?
I. Bibliographic Entry:

II. Story Summary:
   Monique’s French village has been organized by General de Gaulle to provide refuge for Jewish people trying to escape from the Nazi army. Monique’s mother has hidden a Jewish family in her basement without Monique’s knowledge. One night Monique awakens to find a child sitting on her bed. At first, she believes it is a ghost, but soon learns about the Jewish family hiding in her basement. The girls become friends and Monique brings things from outside to Sevrine, so that she feels less removed from her known world. The butterfly Monique brings to Sevrine symbolizes freedom that will soon be restored. Monique and her mom try to help the family escape during the night but mother and daughter are separated due to the shoving of crowds of passengers on the train. Monique returns home to find her mother has also returned. Mother and daughter are suddenly surrounded by butterflies. They accept this sign that Sevrine is safe.

III. Developmental Changes Addressed:
   - Responsibility for one another’s safety
   - Overcoming injustice
   - Love and kindness in times of distress

IV. Themes / Key Concepts:
   - People are responsible for the safety of others.
   - Overcoming injustice can be very difficult.
   - Acts of love and kindness will long be remembered and treasured.

V. Introductory Activity:
   Share stories of the Holocaust you have heard concerning the Nazi army during WWII. Today’s story is a newer story about a girl growing up during that time.

VI. Menu of Discussion Questions:
   Identification:
   What is the setting of the story? What did Monique and Denise witness while walking home from school? What did think about the figure she saw on her bed? How did the soldier react to a butterfly? What is Monique reminded of when the soldier crushes the butterfly?

   Catharsis:
   How did Monique feel about having someone hidden within her own home? How did Sevrine feel about hiding for so long? What did Monique do to help Sevrine through difficult nights? How were the girls discovered during the night? What feeling did Monique experience when slipping Sevrine’s family onto the train?

   Insight:
   Have you ever been separated from your parents in a strange place? How did you feel? Is there a time when you have experience feeling the flutter of butterfly wings? How did you react when you learned that Monique gave her cat away? Would you give a prized possession to a friend?

VII. Follow-up Activity:
   “Scratch color” a thank you card with a butterfly on the front. Write a message to someone that has helped you during this school year. Thank them for the friendship they have shown.