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| **TEXAS CTE LESSON PLAN**[www.txcte.org](http://www.txcte.org) |
| **Lesson Identification and TEKS Addressed** |
| **Career Cluster** | Law, Public Safety, Corrections, & Security |
| **Course Name** | Forensic Science |
| **Lesson/Unit Title** | Crime Scene Investigation |
| **TEKS Student Expectations** | **130.339. (c) Knowledge and Skills**(2) The student, for at least 40 of instructional time, conducts laboratory and/or field investigations using safe, environmentally appropriate, and ethical practices. (A) The student is expected to demonstrate safe practices during laboratory and field investigations.(B) The student is expected to demonstrate an understanding of the use and conservation of resources and the proper disposal or recycling of materials.(3) The student uses scientific methods and equipment during laboratory and field investigations. (F) The student is expected to collect and organize qualitative and quantitative data and make measurements with accuracy and precision using tools such as calculators, spreadsheet software, data-collecting probes, computers, standard laboratory glassware, microscopes, various prepared slides, stereoscopes, metric rulers, electronic balances, gel electrophoresis apparatuses, micropipettors, hand lenses, Celsius thermometers, hot plates, lab notebooks or journals, timing devices, cameras, Petri dishes, lab incubators, dissection equipment, meter sticks, and models, diagrams, or samples of biological specimens or structures.(G) The student is expected to analyze, evaluate, make inferences, and predict trends from data.(H) The student is expected to communicate valid conclusions supported by the data through methods such as investigative reports, lab reports, labeled drawings, graphic organizers, journals, summaries, oral reports, and technology-based reports.(4) The student uses critical thinking, scientific reasoning, and problem solving to make informed decisions within and outside the classroom. (A) The student is expected to analyze, evaluate, and critique scientific explanations by using empirical evidence, logical reasoning, and experimental and observational testing, including examining all sides of scientific evidence of those scientific explanations, to encourage critical thinking.(B) The student is expected to communicate and apply scientific information extracted from various sources such as current events, news reports, published journal articles, and marketing materials.(C) The student is expected to draw inferences based on data related to promotional materials for products and services.(D) The student is expected to evaluate the impact of scientific research on criminal investigation, society, and the environment.(E) The student is expected to evaluate models according to their limitations in representing biological objects or events.(F) The student is expected to research and describe the history of science and contributions of scientists within the criminal justice system.(6) The student recognizes the procedures of evidence collection while maintaining the integrity of a crime scene. (A) The student is expected to compare and contrast the roles of forensic scientists and crime scene investigators.(B) The student is expected to demonstrate the ability to work as a member of a team.(C) The student is expected to conduct a systematic search of a simulated crime scene for physical evidence following crime scene search patterns such as spiral, line, grid, and strip.(D) The student is expected to apply knowledge of the elements of criminal law that guide search and seizure of persons, property, and evidence.(E) The student is expected to describe the elements of a crime scene sketch such as measurements, compass directions, scale of proportion, legend-key, and title.(F) The student is expected to develop a crime scene sketch using coordinates/measurements from fixed points.(G) The student is expected to outline the chain of custody procedure for evidence discovered in a crime scene.(H) The student is expected to demonstrate proper techniques for collecting, packaging, and preserving physical evidence found at a crime scene. |
| **Basic Direct Teach Lesson**(Includes Special Education Modifications/Accommodations and one English Language Proficiency Standards (ELPS) Strategy) |
| **Instructional Objectives** | The students will be able to:* Work as a productive member of a team
* Conduct a systematic search of a mock crime scene
* Develop a crime scene sketch
* Demonstrate proper techniques of collecting and packaging evidence at a crime scene
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| **Rationale** | Crime Scene Investigation is critical to the criminal justice system. The role of the crime scene investigator is critical in obtaining, photographing, and preserving evidence at a crime scene. An understanding of crime scene investigation is crucial for the forensic scientist to further analyze the crime and suspect. |
| **Duration of Lesson** | 5 to 6 hours total– 50 min. lecture– 2–3, 50 min. mock crime labs– 50 min. room sketch– 50 min. final sketch– 50 min. review |
| **Word Wall/Key Vocabulary***(ELPS c1a,c,f; c2b; c3a,b,d; c4c; c5b) PDAS II(5)* |  |
| **Materials/Specialized Equipment Needed** | * **Room Sketch Activity:**
* Paper
* Pen/ Pencil
* Ruler
* **Mock Crime Scene Activity:**
	+ Room for a Mock Crime Scene
	+ Materials to set up as crime scene evidence (plastic weapons, table, chairs, etc.)
	+ Paper or poster board
	+ Black pens and pencils
	+ Clipboard
	+ Rulers
	+ Compass
	+ Tape measure
	+ Camera
	+ Latex gloves
	+ Crime scene tape
	+ Crime scene badge (optional)
	+ Mock Crime Scene Investigation Handout
	+ Data Table
	+ Mock Crime Scene Investigation Post Lab Questions
	+ Mock Crime Scene Investigation Responsibilities Handout
	+ Crime Scene Investigation Review and Key
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| **Anticipatory Set**(May include pre-assessment for prior knowledge) | Show a crime scene clip of your choice (if a video is not available, you can role play a crime scene investigator that does not follow protocol). Have students discuss the procedures that they feel are true to crime scene investigation and those they feel are not true. Use the Discussion Rubric for assessment. |
| **Direct Instruction \*** | I. Process a Crime SceneA. Isolate and secure the sceneB. Document the sceneC. Search for the evidenceD. Collect and package the evidence while maintaining the chain of custodyE. Submit the evidence for analysisII. First Officer on the SceneA. A- Assess the crime scene and assist the injuredB. D- Detain the witness(es)C. A- Arrest the perpetratorD. P- Protect the crime sceneE. T- Take notesIII. Secure the Crime SceneA. Look for signs of lifeB. Cordon off the scene (only allow authorized personnel in)C. Bodies should be certified as “dead” by a medical examiner (ME) before being movedIV. Survey the Crime SceneA. A walkthrough is performed by the crime scene investigator, the first officer, and sometimes the lead detectiveB. Record initial observations of who, what, where, when, and how C. Make a plan of actionV. Document the Crime SceneA. Record the crime scene and potential evidence with1. Notes – record the following while at the crime scene (details are the key)a. Dateb. Timec. Description of the location, weather, and environmental conditionsd. Description of the crimee. Location of the evidence relative to other key pointsf. Names of all people involvedg. Any other relevant information2. Photographya. Nothing should be moved until photographedb. Take photos of the scene and the surroundingsc. Photograph entrances and exitsd. Use wide and close-up photose. Use various angles of each piece of evidencef. Use a ruler to show size3. Sketches – draw a rough sketch at the scene (reconstruct a better one later) includinga. Date, time, and locationb. Scalec. Recovered itemsd. Important featurese. Accurate distance measurements of objects (from two fixed points)f. A legend for the description of itemsg. A compass designating northh. Names of the investigators, victims, and suspects4. Videographya. Narrate the videob. Be objectivec. Record from different perspectivesVI. Measuring TechniquesA. Triangulation1. For each piece of evidence being recorded, use two permanent objects as reference points that are not likely to be moved2. The two reference points and the piece of evidence form a triangle, hence the term triangulation3. Whatever object you are measuring to or from, use the same spot on the object every timeB. Rectangular Coordinates – Baseline1.The simplest form of the rectangular coordinate system2. Using a straight line between two known points, items are measured along the line and then measured perpendicular to the line3. Inside or outside of a house, this line can be a straight wall4. For outdoor scenes, use a string or a long measuring tape as the reference or baselineC. Rectangular Coordinates – Grid1. Measure the distance of the items from two perpendicular base lines2. This technique is particularly appropriate in a room with perpendicular walls or in the outdoors with perpendicular streetsD. Polar Coordinates1. Measure both the distance and the direction (angle) an object is from a known reference point2. For example, 40 feet from the edge of the house and 15 degrees east of northVII. Search the Crime SceneA. When searching a crime scene wear the following, if available, to minimize contamination1. Disposable gloves2. Masks3. Coveralls with a hood4. SlippersB. Search Patterns1. Depend on the size and the location of the crime scene and the number of investigators available2. Stick to one pattern and one supervisor3. It’s better to collect everything and not need it than fail to collect something and need it later4. Spiral – may move inward or outward; best used where there are no physical barriers5. Grid – basically a double-line search; effective, but time-consuming6. Line (Strip) – best in large, outdoor scenes7. Zone (Quadrant) – most effective in houses or buildings; teams are assigned small zones for searchingVIII. Collect and Package EvidenceA. Physical evidence must be packaged and collected before time and weather can alter itB. Physical evidence – any object that can establish that a crime has been committed or links a crime and the victim or suspectC. The Golden Hour – the window of opportunity to collect time-sensitive information or evidenceD. Each item must be placed in a separate container, and sealed and labeled.E. The most fragile evidence is collected and packaged firstF. Different types of evidence require specific or special collection and packaging techniquesG. The body is the property of the coroner or medical examiner; collection of evidence on the body is done by that departmentH. Containers such as vials, envelopes, plastic bags, paper bags, canisters, and cardboard boxes are good packaging devicesI. Most items should be placed in a primary container and then in a secondary containerJ. Trace evidence may be placed on a piece of paper which is then folded in a “druggist fold” and placed in a secondary containerK. Containers should be sealed with tamper proof tape, and dated and initialedL. Each package should contain1. Date, time, and location2.Case number3. Agency and collector’s name4. Victim’s name(s)5. Description of contentsM. Never package two items from two different sources or locationsIX. Chain of CustodyA. There must be a written record of all of the people who have had possession of an item of evidence, beginning at the time of the collectionB. Every person who has handled or examined the evidence must be accounted forC. Chain of Custody should include1. Date and time of transfer2. Location of transfer3. To/From names4. Purpose of the transferX. National DatabasesA. Crime scene investigators can submit evidence for analysis to several national databases depending on the type of evidenceB. Examples include1. Automated Fingerprint Identification System (AFIS)2. Integrated Automated Fingerprint Identification System (IAFIS)3. Combined DNA Index System (CODIS)4. Integrated Ballistics Identification System (IBIS)5. International Forensic Automotive Paint Data Query (PDQ) |
| **Guided Practice \*** |  |
| **Independent Practice/Laboratory Experience/Differentiated Activities \*** | * Mock Crime Scene Investigation. Students will enter a mock crime scene. They will work as a team to investigate the crime scene. Each student will have a specific responsibility assigned to them by the team. Use the Mock Crime Scene Investigation Responsibilities handout. Using all of the team’s information, each student will submit a final sketch of the crime scene and form a hypothesis about what happened. Use the Mock Crime Scene Investigation Handout, the Data Table, and the Mock Crime Scene Investigation Post Lab Questions for the activity. Use the Individual Work Rubric for assessment.
* Teacher note: You will need to set up a mock crime scene the day before the activity (see the materials list for Activity 2). You will need to decide what evidence and weapons will be included. Step-by-step student instructions are found in the Mock Crime Scene Investigation Handout.
* Crime Scene Investigation Review. Students will research and answer the questions on the Crime Scene Investigation Review. The students may work as individuals or in small groups. Use the Crime Scene Investigation Review for the activity and the Crime Scene Investigation Review Key for the assessment.
* Room Sketch. For homework, have students pick a room in their house and make a rough sketch of the room. They will bring it back to class and discuss how they decided what to include in their sketch and relate that to a crime scene. Students will then make a final sketch from their rough sketch. Use the Crime Scene Sketch Rubric to assess the final sketch.
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| **Lesson Closure** |  |
| **Summative/End of Lesson Assessment \***  | * Crime Scene Investigation Quiz and Key
* Crime Scene Investigation Review Key
* Crime Scene Sketch Rubric
* Discussion Rubric
* Individual Work Rubric
* Research Rubric

**Accommodations for Learning Differences:** For reinforcement, students will be given a rough sketch and produce a final sketch from looking at the rough sketch. Use the Crime Scene Sketch Rubric for assessment. |
| **References/Resources/****Teacher Preparation** | * ISBN: 0135158494, Saferstein, Richard. *Forensic Science: An Introduction*. New Jersey: Pearson Prentice Hall, 2008.
* ISBN: 0757518257, Ball-Deslich, Barbara and John Funkhouser. *Forensic Science* *for High School*. 2ndEdition. Kenall/Hunt, 2009.
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| **Additional Required Components** |
| **English Language Proficiency Standards (ELPS) Strategies** |  |
| **College and Career Readiness Connection[[1]](#footnote-1)** | Science StandardsI. Nature of Science: Scientific Ways of Learning and ThinkingC. Collaborative and safe working practices1. Collaborate on joint projects. |
| **Recommended Strategies** |
| **Reading Strategies** |  |
| **Quotes** |  |
| **Multimedia/Visual Strategy****Presentation Slides + One Additional Technology Connection** |  |
| **Graphic Organizers/Handout** |  |
| **Writing Strategies****Journal Entries + 1 Additional Writing Strategy** |  |
| **Communication****90 Second Speech Topics** |  |
| **Other Essential Lesson Components** |
| **Enrichment Activity**(e.g., homework assignment) | Students will research a case where the crime scene was compromised. Examples include the OJ Simpson, JonBenét Ramsey, and Enrique Camarena cases.  |
| **Family/Community Connection** |  |
| **CTSO connection(s)** | SkillsUSA |
| **Service Learning Projects** |  |
| **Lesson Notes** |  |

1. Visit the Texas College and Career Readiness Standards at <http://www.thecb.state.tx.us/collegereadiness/CRS.pdf>, Texas Higher Education Coordinating Board (THECB), 2009. [↑](#footnote-ref-1)